

1- Which of the following speeds is closest to the typical speed of sound waves in air?

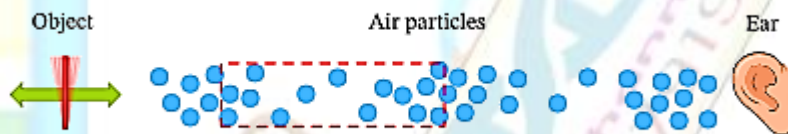
a. 3 000 m/s

c. 1 300 m/s

b. 100 m/s

d. 300 m/s

2- The diagram shows an object, a person's ear that is a short distance away from the object, and air particles between the object and the ear. What is the name for what is outlined by the dashed red box?



a. A wavelength of a sound wave

c. A compression region

b. A rarefaction region

d. No correct answer

3- Sound travels in air at a velocitym/s.

a. 3400

c. 340

b. 430

d. No correct answer

4- Sound Is a property of sound by which the ear can distinguish between harsh and sharp voices.

a. Intensity

c. Pitch

b. Quality

d. All of the answers are correct

5- The quanta of the color.....have the lowest energy.

a. Blue

c. Green

b. Violet

d. Red

6-Two sounds have the same pitch. Which of the following must be the same for the sound waves that transmit these sounds?

- a. Frequency
- b. Amplitude
- c. (a) and (b)
- d. No correct answer

7-Sound.....is the amount of energy falling perpendicular to a unit area surrounding this point in one second.

- a. Intensity
- b. Quality
- c. Pitch
- d. No correct answer

8- Which color bar correctly represents the range of frequencies of sound waves that the human ear can detect?

- a. Green
- b. orange
- c. Red
- d. Violet



9-When the distance between the source of light and the surface decreases to third, the light intensity on the surface.....

- a. increases to three times
- b. increases to nine times
- c. decreases to third
- d. decreases to ninth

10-In a vibrating body of frequency 30 Hz, the number of complete vibrations in a minute is.....

- a. 6
- b. 1800
- c. 60
- d. 600

11- When the distance between the sound source and the ear is doubled, the sound intensity.....

- a. Decrease to its half.
- b. Increase twice.
- c. Increase four times.
- d. Decrease to its quarter.

12- Sound velocity through air may be.....

- a. 330 m/sec. only.
- b. 340 m/sec. only.
- c. 350 m/sec. only.
- d. All the previous answers.

13- If a sound frequency 3000 vibrations/second is produced, we call its waves are.....waves.

- a. Sonic.
- b. Ultra sonic.
- c. Infra sonic.
- d. Transverse.

14- A Savart wheel makes 6 turns in a time of 2 seconds. The wheel has 120 teeth. What is the frequency of the sound produced by the wheel?

- a. 240 Hz
- b. 122 Hz
- c. 1,440 Hz
- d. 360 Hz

15- The media that we can see objects less clearly through them are called.....

- a. Opaque
- b. Transparent
- c. Translucent
- d. No correct answer

16- The energy of a yellow photon is The energy of a violet photon.

a. More than.

c. Equal

b. Less than.

d. All the previous answers.

17- Sound intensity is.....proportional to the square of the amplitude of vibration of the source.

a. Inversely

c. Directly

b. Not

d. No correct answer

18- A Savart wheel makes 10 turns in a time of 4 seconds. The wheel has 50 teeth. How many teeth hit the flexible metal sheet each second?

a. 90 teeth

c. 125 teeth

b. 2,000 teeth

d. 700 teeth

19- We have got the refractive index of 4 materials which result of the four is incorrect.....

a. 0.8

c. 1.8

b. 1.3

d. 1.5

20- A sound wave travels in air with velocity 330 m/s and has a wave length of 0.1 m, so its frequency is.....

a. 330 KHz

c. 33 KHz

b. 3300 KHz

d. 330 Hz

21- All of the following are factors affecting sound intensity except.....

a. amplitude of vibration

b. wind direction

c. medium density

d. frequency

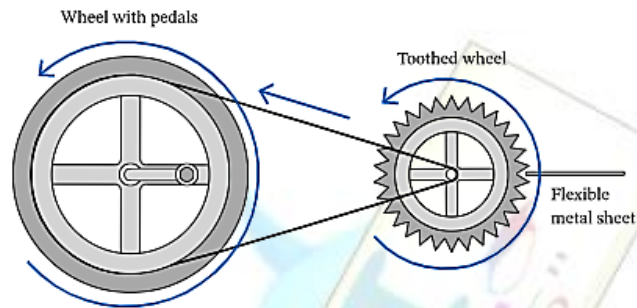
22- A Savart wheel produces a sound. When the pedals are turned faster, the time between teeth hitting the flexible metal sheet.....

a. increases

b. decreases

c. does not change

d. no correct answer



23- The sound travelling in air has less intensity than that travelling in carbon dioxide.

a. Because the density of air is lower than the density of carbon dioxide.

b. Because the density of air is bigger than the density of carbon dioxide.

c. Because the density of carbon dioxide is lower than the density of air.

d. No correct answer.

24- The human ear can distinguish between sounds through different factors

a. sound intensity

b. sound pitch

c. sound quality

d. all the answers are correct

25- When a light ray travels from water to air, the angle of is greater than the angle of.....

a. Incidence; refraction.

c. Incidence; reflection

b. Refraction; incidence.

d. Reflection; incidence.

26- If the angle between the incident sound ray and reflecting surface is 40° , the angle of reflection equals.....

a. 40°

c. 60°

b. 50°

d. 140°

27- The sound of non-uniform frequency, which is uncomfortable to be heard.

a. Noise tones

c. Sound intensity

b. Musical tones

d. No correct answer

28- Sound travels in straight lines in all directions away from a sound source. Which of the following correctly describes how the sound intensity decreases as sound travels away from the point?

a. The sound intensity decreases in direct proportion to the square of the distance that sound travels away from the point.

b. The sound intensity decreases in direct proportion to the distance that sound travels away from the point.

c. (a) and (b)

d. No correct answer

29- The intensity of light of a surface decreases to its quarter as the distance between the surface and light source is doubled.

- a. Because light intensity is not proportional to square distance.
- b. Because light intensity is inversely proportional to square distance.
- c. Because light intensity is directly proportional to square distance.
- d. No correct answer.

30- If the speed of sound through air is 340 m/s and the frequency of vibrating body = 170 Hz, its wavelength equals.....

- a. 4 m
- b. 3 m
- c. 2 m
- d. No correct answer

31- A person stood at distance of 170 m from a wall. He made a sound and heard its echo after 1 s. Calculate the speed of sound in air.

- a. 170 m
- b. 300 m
- c. 340 m
- d. No correct answer

32- The wavelength of sound wave is the distance between the centers of two.....

- a. Compressions only.
- b. Rarefactions only.
- c. Compressions or rarefactions.
- d. No correct answer.

33- Light waves are.....waves.

- a. mechanical transverse
- b. electromagnetic transverse
- c. electromagnetic longitudinal
- d. mechanical longitudinal

34- A thin wooden stick and a bowling ball fall onto a hard floor from the same height. When the objects hit the floor, they stop moving. Neither object changes its shape or temperature, and nor does the floor. The impact of each object on the floor results in sound being generated.

Which would transfer greater energy, the sound produced by the impact of the stick or that produced by the impact of the bowling ball?

- a. The sound produced by the impact of the stick
- b. The sound produced by the impact of the bowling ball
- c. (a) and (b)
- d. No correct answer

35- The inability to see the impurities presence in black honey.

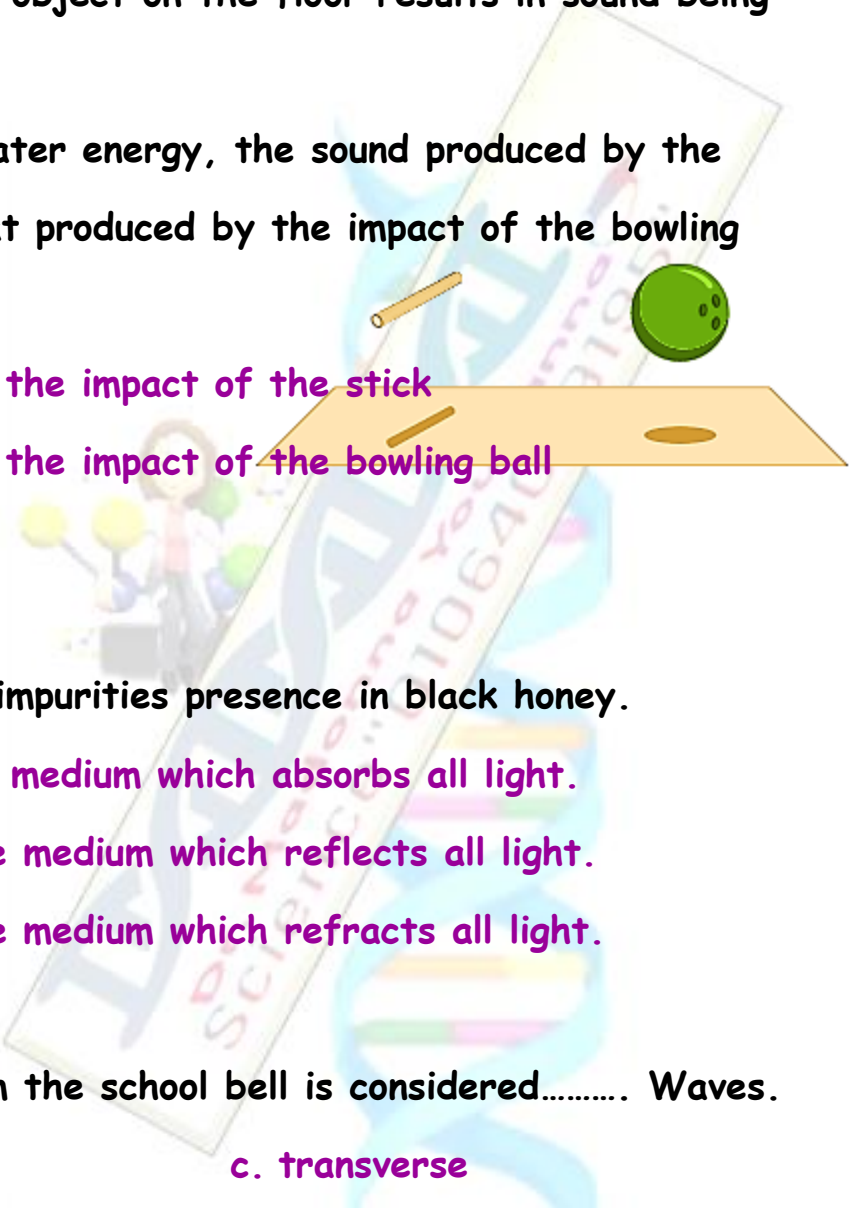
- a. Because it is an opaque medium which absorbs all light.
- b. Because it is an opaque medium which reflects all light.
- c. Because it is an opaque medium which refracts all light.
- d. No correct answer

36- The sound produced from the school bell is considered..... Waves.

- a. longitudinal
- b. electromagnetic
- c. transverse
- d. no correct answer

37- What happens if decreasing the amplitude of the sound source.

- a. Sound intensity decreases.
- b. Sound intensity increases.



c. Sound intensity changes.

d. No correct answer.

38- Sound can be heard from all surrounding directions.

a. Because air travels through sound as pulses of compression and rarefactions whose centers are the air source.

b. Because sound travels through air as pulses of compression and reflections whose centers are the sound source.

c. Because sound travels through air as pulses of compression and rarefactions whose centers are the sound source.

d. Because sound travels through air as pulses of compression and rarefactions whose centers are the air source.

39- Calculate the frequency of a tone produced by Savart's Wheel in 100 s, if the no. of rotations multiplied by the number of teeth equals 28800.

a. 2880 Hz

c. 288 Hz

b. 80 Hz

d. No correct answer

40- The frequency of the sound wave, which propagates through air in 340 m/s and whose length is 0.1 m, equals.....

a. 3400 Hz.

c. 34 Hz

b. 340.1 Hz

d. No correct answer

41- The wavelengths of visible light ranges between Nm.

a. 380 : 700

c. 100 : 500

b. 400 : 600

d. 350 : 800

42- All the following are factors affecting sound intensity except.....

- a. amplitude
- b. frequency
- c. medium density
- d. wind direction

43- The depth of sea water is estimated by using.....waves.

- a. ultrasonic
- b. infrasonic
- c. sonic
- d. all the answers are correct

44- The main source of light on the earth's surface is the.....

- a. Sun
- b. Star
- c. Moon
- d. Candle

45- The color Has the highest frequency among the spectrum colors.

- a. Violet
- b. Green
- c. Red
- d. yellow

46- White light consists of Spectrum colors.

- a. Nine
- b. Eight
- c. Six
- d. seven

47- Photon energy= plank's constant \times

- a. Photon velocity
- b. Photon frequency
- c. Light intensity
- d. No correct answer

48- Light can be easily transmitted throughmedia

- a. Transparent
- b. Semitransparent
- c. Opaque
- d. No correct answer

49- The distance that light travels in second is

- a. Velocity
- b. Intensity
- c. Frequency
- d. No correct answer

50- Light travels in lines.

- a. Circular
- b. Zigzag
- c. Curved
- d. Straight

51- color has the highest wave length.

- a. Red
- b. Violet
- c. Green
- d. yellow

52- Is the distance which is covered by sound waves in one second.

- a. Sound intensity
- b. Sound intensity at a point
- c. Sound velocity
- d. Sound quality

53- are sound waves of frequency of less than 20 Hz.

- a. Sonic waves
- b. Ultra sonic waves
- c. Infra sonic waves
- d. No correct answer

54- Ultrasonic waves are used in several fields such as.....

- a. Military field.
- b. industrial field
- c. medical field
- d. all of the answers are correct

55- Light shines on a surface. Which of the following properties of light is related to the intensity of the light shining on that surface?.

- a. The color of the light
- b. The speed of the light

c. The brightness of the light

d. No correct answer

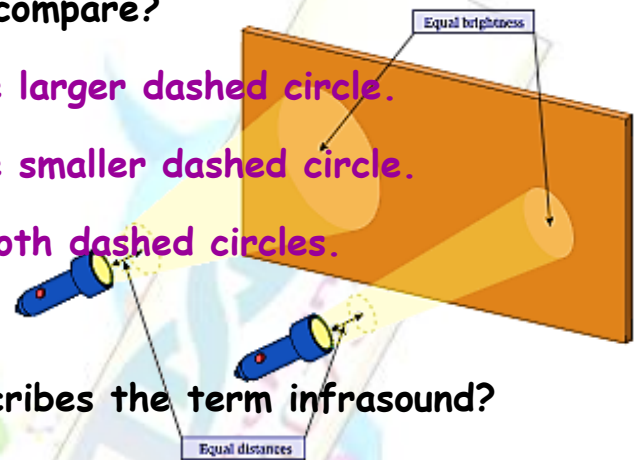
56- Two lamps shine light onto the same surface for the same amount of time. The dashed circles that light from the two lamps passes through have different areas. In which of the following ways do the light intensities at the dashed circles compare?

a. The light intensity is greater at the larger dashed circle.

b. The light intensity is greater at the smaller dashed circle.

c. The light intensity is the same at both dashed circles.

d. No correct answer



57- Which of the following correctly describes the term infrasound?

a. Sound waves with frequencies lower than 0 Hz

b. Sound waves that transfer thermal energy

c. Sound waves with frequencies lower than those that can be heard by humans

d. No correct answer

58- Which of the following correctly explains why a person standing a few meters away from an object producing infrasound would not hear the infrasound?

a. The human ear does not oscillate at infrasonic frequencies.

b. Infrasound can only travel a few centimeters through air.

c. Infrasound is too quiet for human hearing.

d. All of the answers are correct.

59-If the wavelength of a sound wave is increased, what would happen to the sound made by this wave?

- a. It would have a higher pitch
- b. It would have a lower pitch.
- c. It would get softer.
- d. It would get louder.

60-If the wavelength of a sound wave is decreased, what would happen to the sound made by this wave?.

- a. It would have a higher pitch
- b. It would have a lower pitch.
- c. It would get softer.
- d. It would get louder.

61-If the amplitude of a sound wave is decreased, what would happen to the sound made by this wave?

- a. It would have a higher pitch
- b. It would have a lower pitch.
- c. It would get softer.
- d. It would get louder.

62-If the amplitude of a sound wave is increased, what would happen to the sound made by this wave?

- a. It would have a higher pitch.
- b. It would get softer.
- c. It would have a lower pitch.
- d. It would get louder.

63- As the wavelength of sound increases, the frequency.....

- a. Is higher pitched.
- b. Increases.
- c. Decreases.
- d. Stay the same.

64- As sound waves travel through air, they cause air molecules to.....

- a. Bend.
- b. Lose energy.
- c. Be absorbed.
- d. Vibrate.

65- The higher the....., the higher the.....

- a. Frequency; volume.
- b. Frequency; pitch.
- c. Sound; pitch.
- d. Wavelength; decibels.

66- When the distance between the sound source and the ear is doubled, the sound intensity.....

- a. Decreases to its half.
- b. Increases twice.
- c. Increases four times.
- d. Decreases to its quarter.

67- Piano's sound differs from that of violin even they have the same intensity and pitch.

- a. Because they are different sources.
- b. Because they are equal in pitch only.
- c. Due to the difference in their harmonic tones.
- d. All the answers are correct.

68- The angle between the emergent light ray and the normal at point of emergence on the interface is called angle of.....

- a. Refraction.
- b. Deviation.
- c. Emergence
- d. Incidence.

69- The intensity of sound is directly proportional to.....

- a. The square of the distance from the distance from the source.
- b. The square of the amplitude.
- c. The distance from the source to the ear.
- d. No correct answer.

70- Sharp tones have..... Frequencies, while harsh tones have.....frequencies.

- a. Low; high.
- b. High; high.
- c. High; low.
- d. Low; high.

71- We see the sunlight, but don't hear the explosions that occur on the surface of the sun.

- a. Because light travels in vacuum while sound needs a medium to propagate through.
- b. Because light travels in medium while sound needs a vacuum to propagate through.
- c. Because the sun is very far.
- d. Because sound is faster than light.

72- The light ray which falls perpendicular to a reflecting surface , reflects on itself.

- a. Because it refracts.
- b. Because angle of incidence equal angle of reflection equal zero.
- c. Because angle of incidence larger than angle of reflection
- d. No correct answer.

73- If the angle between the incident light ray and the reflected light ray is 60° , so the angle of reflection equals.....

- a. 15°
- b. 30°
- c. 90°
- d. 120°

74- The wave transfers In its direction.

- a- Particles.
- b- Energy.
- c- Matter.
- d- Force.

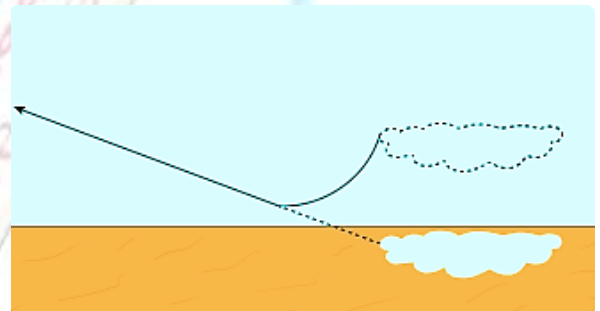
75- The human ear can hear sounds of frequency

- a. 50 KHz
- b. 30 KHz
- c. 300 Hz
- d. 10 Hz

76- The diagram shows how a mirage is produced by refraction of light rays from points in the sky, making the rays appear to come from the ground.

- The refractive index of the air where the light ray direction is curved has a.....value; The refractive index in the air where the light ray direction is straight has a..... value that is..... than the refractive index of the air where the light ray direction is curved.

- a. constant, constant, less
- b. constant, varying, less
- c. varying, constant, greater
- d. varying, constant, less



77- Which of the following is the correct formula for the frequency of the sound produced by a Savart's wheel as it turns at a constant speed for an amount of time?

a. $\text{Frequency} = \frac{\text{number of turns of wheel} \times \text{time} \times \text{number of teeth}}{\text{on wheel}}$

b. $\text{Frequency} = \frac{\text{number of turns of wheel} \times \text{time}}{\text{Number of teeth on wheel}}$

c. $\text{Frequency} = \left(\frac{\text{number of turns of wheel}}{\text{time}} \right) \times \text{number of teeth on wheel}$

d. No correct answer.

78- Which of the following is the approximate sound intensity, in decibels, for the sound generated by a vacuum cleaner, as heard by the person using it?

a. 130 dB

c. 15 dB

b. 100 dB

d. 75 dB

79- Sound travels in straight lines in all directions away from a sound source. How many times greater is the sound intensity at a distance of 1 meter away from the sound source than at a distance of 2 meters away from the sound source?

a. 4 times

c. 2 times

b. 3 times

d. 1 time

80- When the distance between the source of light and the surface of a wall decreases, the light intensity on a surface

a. Decreases

c. Is doubled

b. Increases

d. Remains constant.

81- If the angle between the incident and the reflected rays is 40° , so the angle of reflection =

a. 90°

c. 40°

b. 80°

d. 20°

82- The idea of operating periscope is.....

a. Sound reflection.

c. Light reflection.

b. Analysis of light.

d. Light refraction.

83- As the velocity of the rotation of the gear in savart's wheel decreases, the frequency decreases, consequently the.....of the sound decreases.

a. Pitch.

c. Amplitude.

b. Type.

d. Intensity.

84- If a sound of frequency 3000 vibrations/seconds is produced, we call its waves are.....

a. Sonic

c. Infrasonic

b. Ultra sonic

d. Transverse

85- The level of sound intensity (or noise intensity) is measured by.....

a. Watt.

c. Meters.

b. Decibel.

d. No correct answer.

86- They are sound waves of frequencies lower than 20 Hz.

a. Ultrasonic waves.

b. Infrasonic waves.

c. Sonic.

d. No correct answer.

87- Sound intensity is directly proportional to the.....

a. Amplitude

c. (a) and (b)

b. square of amplitude

d. No correct answer

88- The tones accompanying the fundamental tone, but they are higher in pitch and less in intensity.

a. Harmonic tones.

c. (a) and (b)

b. Noises.

d. No correct answer

89- The wood does not allow the passage of light through it.

a. Because it is an opaque medium that reflects all light.

b. Because it is an opaque medium that absorbs all light.

c. Because it is an opaque medium that refracts all light.

d. No correct answer.

90- Light waves are considered electromagnetic waves.

a. Because they need a medium to travel through.

b. Because they do not need a medium to travel through.

c. They are not electromagnetic waves.

d. No correct answer.

91- The medium which does not permit light to pass through it.

a. Opaque medium.

b. Spectrum colors.

c. Translucent media.

d. Transparent media.

92- A structure used in the analysis of light.

a. Periscope.

c. Triangular glass prism

b. Savart's wheel

d. (a) and (c).

93- The scientist..... proved that energy of the photon is.....

Proportional to its frequency.

a. Newton; inversely.

c. Max Planck; inversely.

b. Newton; directly.

d. Max Planck; directly.

94- When we look at a coin in a glass of water, its..... position appears to be lower than the..... position.

a. Apparent; real.

c. Left; real.

b. Real; apparent.

d. Right; real.

95- Natural phenomena related to reflection and refraction of light.

a. Mirage

c. position of object

b. apparent shape of object

d. all of the answers are correct

96-is used to monitor the dangerous chemical reactions in the lab.

a. Optical fibers

c. Infrasonic waves

b. Periscope

d. No correct answer

97- The ratio between the velocities of light through air to the velocity of light through another transparent medium.

a. Total internal reflection

b. Absolute refractive index

c. angle of reflection

d. no correct answer

98- The mirage phenomenon takes place on desert roads at.....
especially in the.....seasons.

a. Night; winter.

c. Noon; winter.

b. Night; summer.

d. Noon; summer.

99- It is the turning of a light ray when It is incident on a medium of larger optical density by an angle larger than the critical angle of this medium.

a. Absolute refractive index

c. Total internal refraction

b. Total internal reflection

d. No correct answer

100- The energy of a photon of green light is the energy of a photon of yellow light.

a. less than

c. greater than

b. equal to

d. no correct answer

101- The ray falling perpendicular on the separating surface between two mediums different in the optical density.....

a. Refract.

b. Does not refract.

c. Absorbed.

d. No correct answer.

102- The energy of light photon is less than that of any other lights.

a. Green

b. Yellow

c. Blue

d. red

103- If the angle of incidence equals 40° , the angle of reflection

equals.....

a. 30°

c. 50°

b. 40°

d. 90°

104- Light travels through space at a speed of m/s.

a. 3×10^7

c. 3×10^8

b. 3×10^6

d. No correct answer

105- The regular reflection occurs on.....surface.

a. Rough

c. (a) and (b)

b. Smooth

d. No correct answer

106- Doctors use waves which have frequency to break down kidney and ureter's stones

a. less than 20 Hz

b. more than 20 KHz

c. equal to 20 Hz

d. less than 20 KHz

107- The incident light ray, the reflected light ray and the normal to the surface of reflection at the point of incidence all lie in one plane perpendicular to the reflecting surface.

- a. Second law of reflection
- b. First law of reflection
- c. (a) and (b)
- d. No correct answer

My Best Wishes
Dr. Madonna Youhanna



Note:

لو في اسألة ثاني

هنزودهااااا

Answers

Question number	Answers
1	d
2	a
3	c
4	c
5	d
6	a
7	a
8	b
9	a
10	b
11	d
12	b
13	a
14	d
15	c
16	b
17	c
18	c
19	a
20	b
21	d

22	b
23	a
24	d
25	b
26	b
27	a
28	a
29	b
30	c
31	c
32	c
33	b
34	b
35	a
36	a
37	a
38	c
39	c
40	a
41	a
42	b
43	a
44	a
45	a
46	d
47	b
48	a
49	a

50	d
51	b
52	c
53	c
54	d
55	c
56	c
57	c
58	a
59	b
60	a
61	c
62	d
63	c
64	d
65	b
66	d
67	c
68	c
69	b
70	c
71	a
72	b
73	b
74	b
75	c
76	d
77	c

78	d
79	a
80	c
81	d
82	c
83	a
84	a
85	b
86	b
87	b
88	a
89	b
90	b
91	a
92	c
93	d
94	b
95	d
96	b
97	b
98	d
99	b
100	c
101	b
102	d
103	b
104	c
105	b

106	b
107	a
108	
109	



April Revision – Prep 2

Choose the correct answer:

1. Sound waves travel through.....

- a. solids. b. liquids. c. gases. d. (a) , (b) and (c).

2. Sound waves do not travel through.....

- a. water. b. air. c. vacuum. d. wood.

3. The sound produced from the school bell is considered as.....waves.

- a. longitudinal b. electromagnetic c. transverse d. a and c

4. All of the following indicate the nature of sound waves except that.....

- a. it's mechanical longitudinal waves.
b. it propagates as spheres of compressions and rarefactions.
c. its velocity through air is 430 m/s.
d. no correct answer.

5. Before using modern technology in communication, people in desert were putting their ears on the ground to hear the sound of horses of their enemies at very far places because.....

- a. sense of hearing is stronger than sense of vision.
b. the velocity of sound through solids (ground) is greater than that through air.
c. sound travels faster than light.
d. sound of horses' feet is very loud.

6. The sound velocity is measured in.....unit.

- a. Hertz b. meter c. decibel d. meter/second

7. Sound wave that propagates through air with velocity 330 meter/sec. and of wavelength 0.1 meter, its frequency equals.....

- a. 330 Kilo Hertz. b. 3300 Hertz. c. 33 Kilo Hertz. d. 330 Hertz.

8. All of these sounds are of uniform frequency except the sound of.....

- a. violin. b. guitar. c. loudspeakers. d. piano.

9. The voice of Adam differs from that of Sara because they are different in.....

- a. kind. b. intensity. c. pitch. d. a and c.

10. The human ears can often differentiate between the voice of the man and that of the woman, because.....

- a. the voice of a woman is often high pitch and sharp.
b. the voice of a woman is often low pitch and sharp.
c. the voice of a woman is often high pitch and rough.
d. the voice of a man is often high pitch and sharp.

11. The sound pitch increases by.....

- a. the decrease in frequency.
b. the increase in frequency.
c. the increase in amplitude.
d. the increase in the distance between the ear and the sound source.

12. We can prove that the pitch of sound depends on the frequency of vibration of the sound source by using.....with knowing the number of cycles (turns) and the number of gear teeth.

- a. the resonance box
- b. a stretched string of fixed length
- c. Savart's wheel
- d. the tuning fork

13. The frequency of the vibrating string.....to its length.

- a. equals
- b. is inversely proportional
- c. is directly proportional
- d. has no direct relation

14. The sound of frequency 200 Hz is.....than the sound of frequency 100 Hz.

- a. stronger
- b. sharper
- c. weaker
- d. harsher

15. A student rotates Savart's wheel with different velocities, the velocity which gives more rough sound is.....

- a. 20 rotation/sec.
- b. 300 rotation/min.
- c. 6 rotation/sec.
- d. 10 rotation/sec.

16. The frequency of sound produced from a plate touching a gear of 20 teeth in Savart's wheel when the wheel rotates 300 cycle/minute equals.....Hz.

- a. 300
- b. 15
- c. 6000
- d. 100

17. As the number of teeth of the gear in Savart's wheel increases, the of the produced sound increases.

- a. amplitude
- b. intensity
- c. frequency
- d. quality

18. As the velocity of the rotation of the gear in Savart's wheel decreases, frequency decreases, consequently the of the sound decreases.

- a. pitch
- b. type
- c. amplitude
- d. intensity

19. The frequency of the sound produced from Savart's wheel depends on.....

- a. the speed of rotation of the gear only.
- b. the distance between the gear and you only.
- c. the number of gear's teeth only.
- d. (a) and (c) are correct.

20. The scientific term that expresses the strength and the weakness of sound is.....

- a. the frequency of sound.
- b. the pitch of sound.
- c. the quality of sound.
- d. the intensity of sound.

21. The intensity of sound is directly proportional to.....

- a. the square of the distance from the source.
- b. the square of the amplitude.
- c. the distance from the source.
- d. no correct answer.

22. The intensity of sound weakens as we go away from its source, because.....

- a. $I \propto \frac{1}{d}$
- b. $I \propto d$
- c. $I \propto \frac{1}{d^2}$
- d. $I \propto d^2$

23. When the distance between the sound source and the ears is doubled, the sound intensity.....

- a. decreases to its half.
- b. increases twice.
- c. increases four times.
- d. decreases to its quarter.

24. The measuring unit of sound intensity is.....

- a. m/sec.
- b. watt/m².
- c. decibel.
- d. Hertz.

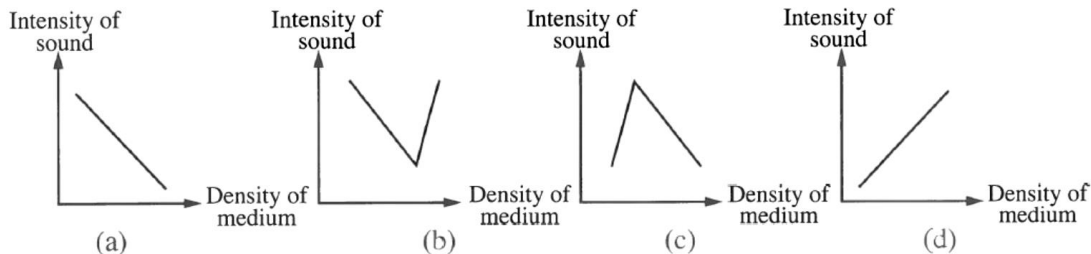
25. All of the following are factors affecting sound intensity except the.....

- a. amplitude of vibration.
- b. medium density.
- c. frequency.
- d. wind direction.

26. The resonance box increases the intensity of sound because it.....

- a. decreases the vibrating surface area.
- b. increases the vibrating surface area.
- c. increases the frequency of the produced sound.
- d. decreases the pitch of the produced sound.

27. The figurerepresents the relation between the sound intensity and the density of the medium.



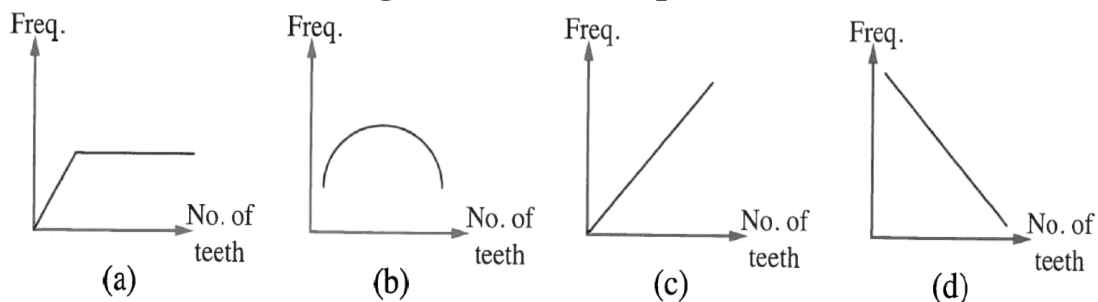
28. Sounds of different musical instruments can be differentiated from each other by.....

- a. frequency.
- b. harmonic tones.
- c. fundamental tone.
- d. sound intensity.

29. The higher the....., the higher the.....

- a. Frequency; volume.
- b. Frequency; pitch.
- c. Sound; pitch.
- d. Wavelength; decibels.

30. In Savart's wheel, which of the following graphs represents the relation between the frequency and the number of teeth gear at constant speed?



31. The human ear can distinguish between sounds that are equal in pitch and intensity if their sources are different, because the fundamental tone is accompanied by harmonic tones, which are.....

- a. higher in intensity and frequency.
- b. lower in intensity and higher in frequency.
- c. lower in intensity and frequency.
- d. higher in intensity and lower in frequency.

32. Sharp tones have..... Frequencies, while harsh tones have.....frequencies.

- a. Low; high.
- b. High; high.
- c. High; low.
- d. Low; high.

33. Ear plugs made of are used to avoid the hazards of noise in loud places.

- a. plastic
- b. silicon
- c. wood
- d. paper

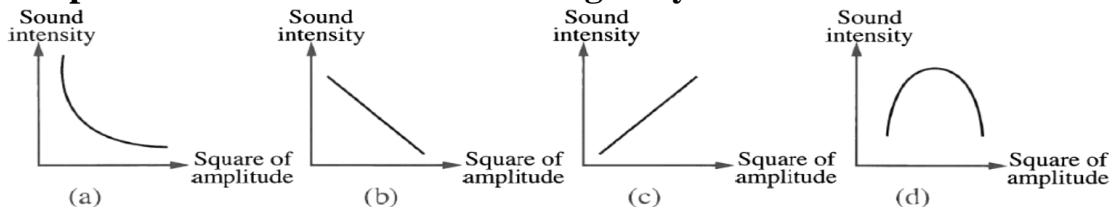
34. If the wavelength of a sound wave is decreased, what would happen to the sound made by this wave?

- a. It would have a higher pitch
- b. It would have a lower pitch.
- c. It would get softer.
- d. It would get louder.

35. As sound waves travel through air, they cause air molecules to.....

- a. Bend.
- b. Lose energy.
- c. Be absorbed.
- d. Vibrate.

36. The figure.....represents the relation between the intensity of sound and the square of amplitude of vibration of a vibrating body.



37.....waves are non-audible sounds.

- a. Infrasonic b. Ultrasonic c. Sonic d. (a) and (b)

38.The human ear can hear sounds of frequency.....

- a. 50 KHz. b. 30 KHz. c. 300 Hz. d. 5 Hz.

39.The dolphin's trainer uses a whistle producing a sound which can be heard by dolphins and cannot be heard by man, the frequency of such sound equals.....Hertz.

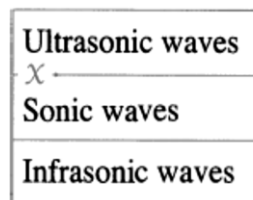
- a. 20 b. 2000 c. 1000 d. 25000

40.A sound wave of frequency 30000 cycle/sec. is called.....wave.

- a. sonic b. infrasonic c. ultrasonic d. radio

41.The frequency of the point (X) is equal to.....Hertz.

- a. 20 b. 20000
c. 200 d. 2000



42. Ultrasonic waves are used in.....

- a. breaking down kidney and ureter stones. b. sterilizing food.
c. discovering landmines. d. (a) , (b) and (c) are correct.

43. Doctors use waves, which have frequency.....to break down kidney and ureter stones.

- a. less than 20 Hz b. equal to 20 Hz c. more than 20 KHz

44. When the distance between the sound source and the ear is doubled, the sound intensity.....

- a. Decreases to its half. b. Increases twice.
c. Increases four times. d. Decreases to its quarter.

45. Light waves are.....waves.

- a. mechanical transverse b. electromagnetic transverse
c. electromagnetic longitudinal d. mechanical longitudinal

46. Which of these characteristics is not applied on light?

- a. It is an electromagnetic wave. b. It needs a medium to travel through.
c. It travels in straight lines. d. It has the ability to stimulate the sense of vision.

47. The distance that light travels in a second is.....

- a. light frequency. b. light speed. c. light intensity. d. no correct answer.

48. The main source of light on the Earth's surface is the.....

- a. Sun. b. Moon. c. Star. d. Candle.

49. White light consists of.....spectrum colours.

- a. nine b. six c. seven d. eight

50.colour has the lowest deviation.

- a. Violet b. Green c. Red d. Yellow

51. The.....colour in the spectrum colours has the highest frequency.

- a. violet b. green c. red d. yellow

52. If the frequency of red colour is 4×10^{12} Hz, the frequency of violet colour is $\dots \times 10^{12}$ Hz.

- a. 1.5 b. 3.5 c. 4 d. 7.5

53. The wavelengths of visible light ranges between nm.

- a. 380 : 700 b. 400 : 600 c. 100 : 500 d. 350 : 800

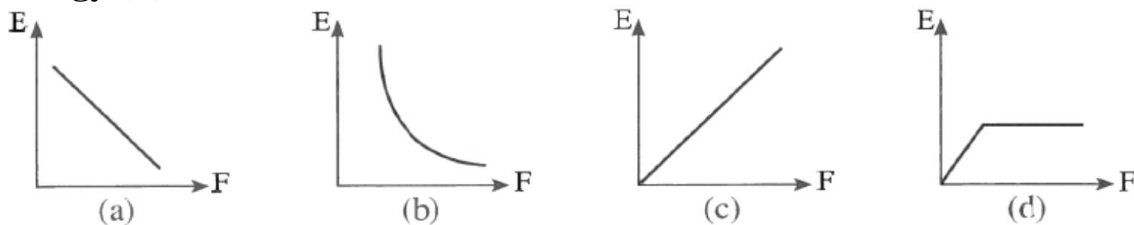
54. The photon energy = Planck's constant x.....

- a. photon frequency. b. photon wavelength. c. amplitude. d. no correct answer.

55. The quanta of..... colour has the lowest energy.

- a. blue b. violet c. green d. red

65. Which of the following graphs represents the relation between the frequency of light (F) and its energy (E)?



57. The quantum of energy of green light is.....the quantum of energy of yellow light.

- a. greater than b. equal to c. less than d. no correct answer

58. Which of the following arrangements is correct concerning the increase of photon energy?

- a. Violet \rightarrow blue \rightarrow yellow \rightarrow red b. Red \rightarrow blue \rightarrow violet \rightarrow yellow
c. Violet \rightarrow red \rightarrow blue \rightarrow yellow d. Red \rightarrow yellow \rightarrow blue \rightarrow violet

59. All of the following are among the characteristics of violet colour except.....

- a. it has the highest frequency of the spectrum colours.
b. it has the longest wavelength of the spectrum colours.
c. its photon has the largest energy.
d. it is the nearest colour to the base of the prism.

60. The medium which permits most light to pass through is called.....medium.

- a. transparent b. translucent c. semi-transparent d. opaque

61. Media that we can see objects less clearly through are called.....media

- a. opaque b. transparent c. translucent d. spectrum colours.

62.....media don't allow light to pass through.

- a. Transparent b. Translucent c. Semi-transparent d. Opaque

63. All of the following are examples of transparent media except.....

- a. air. b. tissue paper. c. glass. d. clear water.

64. Which one from the following doesn't permit the passage of light through it?

- a. Air. b. Clear water. c. Flint glass. d. Milk.

65. Light can be easily transmitted through.....media.

- a. transparent b. semi-transparent c. opaque d. (a) and (b)

66. The human skin is considered as a /an.....medium.

- a. transparent b. opaque c. translucent d. no correct answer

67. By increasing the thickness of the transparent medium, the quantity of light that passes through it.....

- a. decreases. b. increases. c. remains constant. d. there is no correct answer.

68. Light travels in lines.

- a. curved b. circular c. straight d. no correct answer

69. Light.....

- a. travels in straight lines. b. consists of compressions and rarefactions.
c. can be analysed. d. (a) and (c) are correct.

70. The light intensity of a surface is inversely proportional to thebetween the surface and the source of light.

- a. distance b. square of the distance
c. cube of the distance d. (a) or (b) is correct

71. When the distance between the source of light and the surface of a wall decreases, the light intensity on the surface.....

- a. decreases. b. increases. c. is doubled. d. remains constant.

72. If the distance between a surface and light source decreases to its half, the light intensity of the surface.....

- a. decreases to its one fourth. b. decreases to its half.
c. increases twice. d. increases four times.

73. Light.....plays an important role in the formation of inverted images of the objects on the road when rain falls.

- a. velocity b. refraction c. reflection d. frequency

74. In.....reflection, the reflected rays are reflected in many directions.

- a. irregular b. uniform c. regular d. total internal

75.A regular reflection happens when light rays fall on.....

- a. a woolen jacket. b. a stainless steel sheet.
c. a leaf of a tree. d. a piece of leather.

76. Light is reflected.....when it falls on a smooth bright surface.

- a. regularly b. irregularly c. and refracted d . and scattered

77. Light is reflectedwhen it falls on a rough surface.

- a. regularly b. irregularly c. and refracted d. in one direction

78. The angle between the reflected ray and the line perpendicular to the reflecting surface at the point of incidence is called the angle of.....

- a. emergence. b. incidence. c. refraction. d. reflection.

79. If the angle between the incident light ray and the reflected light ray is 90° , so the angle of incidence equals.....

- a. 0° b. 30° c. 45° d. 90°

80. If the angle between a reflected light ray and a reflecting surface is 30° , so the angle of reflection will be equal to.....

- a. 15° b. 30° c. 60° d. 90°

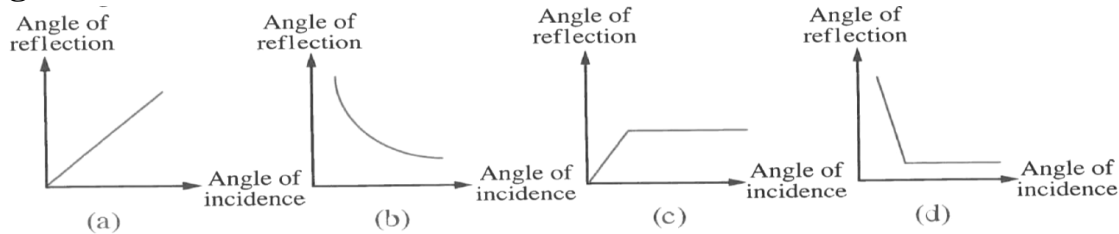
81. If you know that the incident ray which falls perpendicular on a reflecting surface reflects on itself, so the angle of reflection is equal to.....

- a. 0° b. 90° c. 120° d. 180°

82. The angle of incidence of light isits angle of reflection.

- a. larger than b. smaller than c. equal to d. no correct answers

83. Which of the following graphs represents the relation between the angle of incidence and the angle of reflection?



84. The ability of the transparent medium to refract the light is called the.....of the medium.

- a. refractive index b. density c. optical density d. viscosity

85. The.....is the change in the direction of light rays when light passes from a transparent medium to another transparent medium of different optical density.

- a. light reflection b. light refraction c. light absorption d. light separation

86. The angle between the refracted light ray and the normal at the point of incidence on the separating surface is.....

- a. the angle of reflection. b. the angle of refraction.
c. the angle of incidence. d. no correct answer.

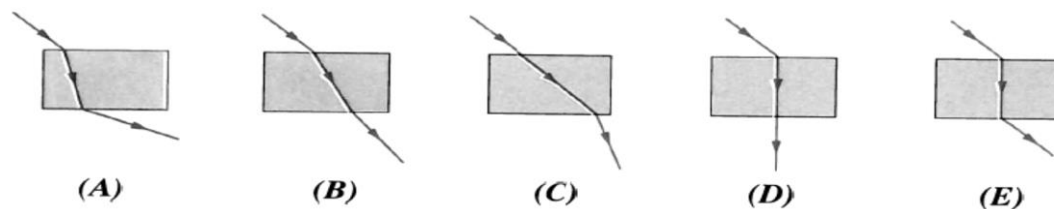
87. The angle between the emergent light ray and the normal at the point of emergence on the interface is called the angle of

- a. incidence. b. reflection. c. refraction. d. emergence.

88. Light refraction is due to the difference in.....through different media.

- a. sound intensity b. nature of the surface
c. light velocity d. all the previous answers

89. Which of the following figures represents the refraction of light in a rectangular glass block ? Give a reason.



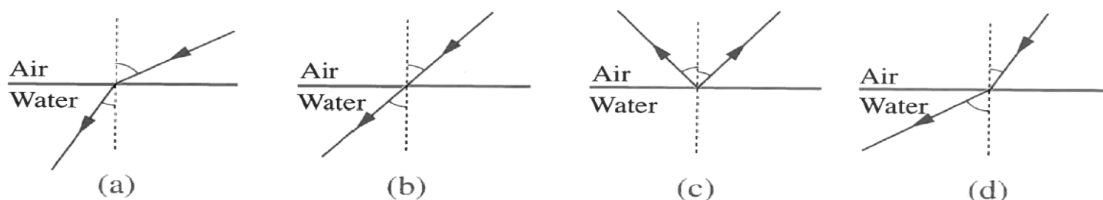
90. The angle of incidence is greater than the angle of refraction when a light ray travels from.....

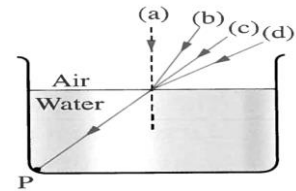
- a. air to water. b. air to glass. c. water to air. d. (a) and (b) are correct.

91. When light ray travels from air to water, it.....

- a. refracts near the normal. b. refracts far from the normal.
c. passes without refraction. d. reflects.

92. Which of the following figures represents a correct light refraction?



[illegible]

a. more than one. b. less than one. c. equal to one. d. equal zero.

a. 0.8 b. 1.3 c. 1.5 d. 1.8

- the speed of light through another medium.
- the speed of light through the same medium.
- the speed of sound through the same medium.
- no correct answer.

a. Apparent; real. b. Real; apparent. c. Left; real. d. Right; real.

a. reflection b. refraction c. total internal reflection d. no correct answer

a. echo.

b. mirage.

c. seeing objects higher than its normal position.

d. no correct answer.

- a. Because it refracts.
- b. Because angle of incidence equal angle of reflection equal zero.
- c. Because angle of incidence larger than angle of reflection
- d. No correct answer.

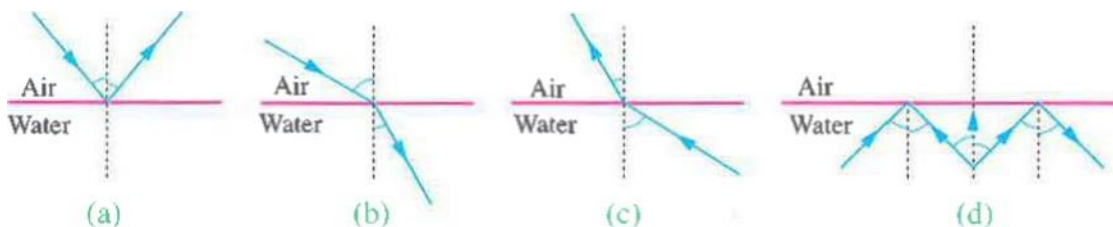
a. 3×10^7 b. 3×10^6 c. 3×10^8 d. No correct answer

a. Rough b. Smooth c. (a) and (b) d. No correct answer

(A)	(B)
1. The sound pitch 2. The quality of sound 3. The sound intensity	a. is the characteristic, by which the ear can differentiate between the sounds as strong or weak. b. is the property, by which the ear can distinguish between sharp and rough sounds. c. is the number of the complete vibrations in one second. d. is the characteristic, by which the ear can distinguish between sounds from different sources even if they are equal in intensity and pitch.

Choose the correct answer:

1. As the wavelength of sound increases, the frequency.....
 - a. Is higher pitched.
 - b. Decreases.
 - c. Increases.
 - d. Stay the same.
2. Find the frequency of a musical tone similar to the frequency of a tone produced using Savart's wheel rotated with a velocity of 960 cycles in two minutes, given that the number of teeth of the gear is 30 teeth is.....
 - a. 240 Hz.
 - b. 120 Hz.
 - c. 60 Hz.
 - d. 50 Hz.
3. The angle between the emergent light ray and the normal line at point of emergence on the interface is called angle of.....
 - a. Refraction.
 - b. Emergence
 - c. Deviation.
 - d. Incidence.
4. decreases the frequency decreases the.....of the sound. As the velocity of the rotation of the gear in savart's wheel decrease
 - a. Pitch.
 - b. Amplitude
 - c. Type.
 - d. Intensity
5. The angle between the reflected ray and the line perpendicular to reflecting surface at the point of incidence is called the angle of.....
 - a. emergence.
 - b. incidence.
 - b. refraction.
 - d. reflection.
6. Which of the following figures represents light refraction:



7. All of the following are among the characteristics of violet colour except..
- a. it has the highest frequency of the spectrum colours.
 - b. it has the longest wavelength of the spectrum colours.
 - c. its photon has the largest energy.
 - d. it is the nearest colour to the base of the prism.
8. The tones accompanying the fundamental tone, but they are higher in pitch and less in intensity.
- a. Harmonic tones.
 - b. (a) and (b)
 - c. Noises.
 - d. No correct answer
9. Doctors use waves which have frequency to break down kidney and ureter's stones
- a. less than 20 Hz
 - b. more than 20 KHz
 - c. equal to 20 Hz
 - d. less than 20 KHz
10. Light travels through space at a speed of m/s.
- a. 3×10^7
 - b. 3×10^6
 - c. 3×10^8
 - d. No correct answer
11. The energy of a photon of green light is the energy of a photon of yellow light.
- a. less than
 - b. greater than
 - b. equal to
 - d. no correct answer

12. Light can transmit through media.
- a. transparent
 - b. semi-transparent
 - c. opaque
 - d. (a) and (b)
13. The sound velocity is measured in... unit.
- a. Hertz
 - b. metre
 - c. decibel
 - d. metre/second
14. Photon energy = Planck's constant x.....
- a. photon frequency.
 - b. photon wavelength.
 - c. amplitude.
 - d. no correct answer.
15. The ray falling perpendicular on the separating surface between two mediums different in the optical density.....
- a. Refract.
 - b. Does not refract.
 - c. Absorbed.
 - d. No correct answer.
16. Sound of frequency 200 Hz isthan the sound of frequency 100 Hz.
- a. stronger
 - b. weaker
 - c. sharper
 - d. harsher
17. The ratio between the velocities of light through air to the velocity of light through another transparent medium.
- a. Total internal reflection.
 - b. Absolute refractive index.
 - c. angle of reflection.
 - d. no correct answer.
18. Natural phenomena related to reflection and refraction of light.
- a. Mirage.
 - b. apparent shape of object.
 - c. position of object.
 - d. all of the answers are correct.

19. The medium which does not permit light to pass through it.
- a. Opaque medium.
 - b. Translucent media.
 - c. Spectrum colors.
 - d. Transparent media.
20. a sound of frequency 3000 vibrations/second, It produced waves are....
- a. Sonic.
 - b. Infrasonic.
 - c. Transverse.
 - d. Ultra-sonic.
21. A student rotates Savart's wheel with different velocities, the velocity which gives more rough sound is.....
- a. 20 rotation/sec.
 - b. 300 rotation/min.
 - c. 6 rotation/sec.
 - d. 10 rotation/sec.
22. Sound travels in straight lines in all directions away from a sound source. How many times greater is the sound intensity at a distance of 1 meter away from the sound source than at a distance of 2 meters away from the sound source?
- a. 4 times.
 - b. 2 times.
 - c. 3 times
 - d. 1 time.
23. Light shines on a surface. Which of the following properties of light is related to the intensity of the light shining on that surface?
- a. The color of the light.
 - b. The speed of the light.
 - c. The brightness of the light.
 - d. No correct answer.
24. Light travels in lines.
- a. Circular
 - b. Curved
 - c. Zigzag
 - d. Straight

25. By increasing the thickness of the transparent medium, the quantity of light that passes through it

- a. decreases.
- b. increases.
- c. remains constant.
- d. there is no correct answer.

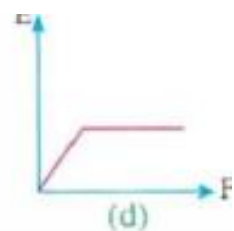
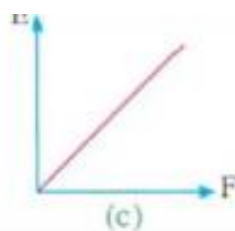
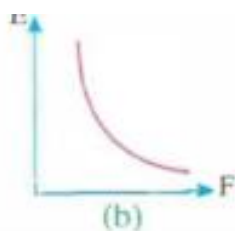
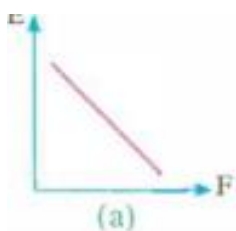
26. The distance that light travels in second is the light

- a. Velocity.
- b. Frequency.
- c. Intensity.
- d. No correct answer.

27. Which one of the following doesn't permit the passage of light through it?

- a. Air.
- b. Clear water.
- c. Flint glass.
- d. Milk.

28. Which of the following graphs represents the relation between the frequency of light (F) and its energy (E) ?.....



29. White light consists of Spectrum colors.

- a. Nine
- b. Six
- c. Eight
- d. seven

30. colour has the lowest deviation.

- a. Violet
- b. Green
- c. Red
- d. Yellow

31. Light waves are waves.
- a. mechanical transverse
 - b. electromagnetic transverse
 - c. electromagnetic longitudinal
 - d. mechanical longitudinal
32. If the angle between the incident light ray and the reflected light ray is 90° , so the angle Of incidence equals
- a. 60°
 - b. 30°
 - c. 45°
 - d. 90°
33. The main source of light on the earth's surface is the.....
- a. Sun.
 - b.. Moon.
 - c. Star.
 - d. Candle.
34. The wavelengths of visible light ranges between Nm.
- a. 400 : 600
 - b. 350 : 800
 - c. 380 : 700
 - d. 100 : 500
35. The inability to see the impurities presence in black honey.
- a. Because it is an opaque medium which absorbs all light.
 - b. Because it is an opaque medium which refracts all light.
 - c. Because it is an opaque medium which reflects all light.
 - d. No correct answer.
36. The intensity of sound weakness as we go away from is source, because...

A) $I \propto \frac{1}{d}$

B) $I \propto d^2$

C) $I \propto \frac{1}{d^2}$

D) $I \propto d$

37. The wavelength of sound wave is the distance between the centers of two.....

- a. Rarefactions only.
- b. Compressions or rarefactions.
- c. Compressions only.
- d. No correct answer.

38. A person stood at distance of 170 m from a wall. He made a sound and heard its echo after 1 s. Calculate the speed of sound in air.

- a. 340 m/s.
- b. 170 m/s.
- c. 300 m/s.
- d. No correct answer.

39. When a light ray travels from water to air, the angle of is greater than the angle of.....

- a. Refraction - incidence.
- b. Incidence - reflection
- c. Incidence - refraction.
- d. Incidence - emergent.

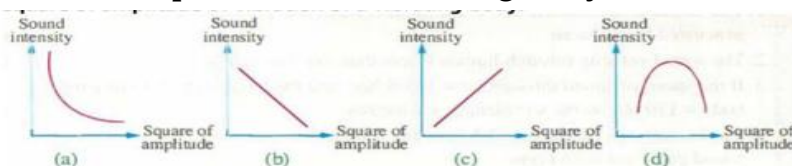
40. If you know that the incident ray which falls perpendicular on a reflecting surface reflects on itself, so the angle of reflection is equal to.....

- a. 120° .
- b. 0° .
- c. 180° .
- d. 90° .

41. if the density of medium increase to double the sound intensity

- a. decreases to half.
- b. increases to double.
- c. remains constant.
- d. there is no correct answer.

42. The figure represents the relation between the intensity of sound And the square of amplitude of a vibrating body.



43. if the angle between the incident ray and the reflecting surface =30 find the angle of reflection

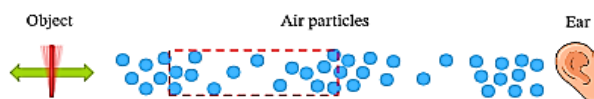
- a. 30°. b. 60°. c. 90°. d. 120°.

44. When the distance between the sound source and the ears is doubled, the sound intensity.....

- a. Increase twice. b. decrease its quarter.
c. decrease to its half. d. increase four times.

45. The diagram shows an object, a person's ear that is a short distance away from the object, and air particles between the object and the ear. What is the name for what is outlined by the dashed red box?

- a. A wavelength of a sound wave
b. A compression region
c. A rarefaction region
d. No correct answer



46. The angle of incident is greater than the angle of refraction when a light travels ray from.....

- a. Air of water. b. water to air.
c. air to glass. d. (a) and (b).

47. The dolphin's trainer uses a whistle producing a sound which can be heard by dolphins and can not be heard by man, the frequency of such sound equals.....Hertz.

- a. 1000 b. 2000 c. 20 d. 25000

48. Which of the following speeds is closest to the typical speed of sound waves in air?

- a. 100 m/s. b. 3000 m/s. c. 300 m/s. d. 1300 m/s.

Model answer

1. b	9. b	17. b	25. a	33. a	41. b
2. a	10. c	18. a	26. a	34. c	42. c
3. b	11. b	19. a	27. d	35. a	43. b
4. a	12. d	20. a	28. c	36. c	44. b
5. d	13. d	21. b	29. d	37. b	45. c
6. c	14. a	22. a	30. c	38. a	46. a
7. b	15. b	23. c	31. b	39. a	47. d
8. a	16. c	24. d	32. c	40. b	48. c



April Revision

★ Choose the right answer:

Mr. Ahmed ElBasha

1. The light ray refracts the normal when it travels from air to glass.
a. near to b. away from c. perpendicular to d. along
2. All the following are from the factors affecting sound intensity except the
a. amplitude. b. frequency. c. density of medium. d. wind direction.
3. The quantum of energy of green light is the quantum of energy of yellow light.
a. greater than b. equal to c. less than d. no correct answer
4. Light waves are waves.
a. mechanical transverse b. electromagnetic longitudinal
c. electromagnetic transverse d. mechanical longitudinal
5. A sound wave travels in air with velocity 330 m/s and has a wavelength of 0.1 m, its frequency is
a. 330 KHz. b. 3300 Hz. c. 33 KHz. d. 330 Hz.
6. Sound of frequency 200 Hz is than the sound of frequency 100 Hz.
a. sharper b. stronger c. harsher d. weaker
7. Angle of incidence is greater than the angle of refraction, when a light ray travels ...
a. from glass to air. b. from air to glass.
c. in the same medium. d. no correct answer.
8. The absolute refractive index of water is
a. 0.5 b. 0.8 c. 0.33 d. 1.33
9. When the incident light ray reflects on itself, the angle of incidence equals
a. 0° b. 90° c. 120° d. 180°

10. When the distance between the source of light and the surface of a wall is doubled, the light intensity on the surface

- a. decreases to quarter.
- b. increases to double.
- c. remains constant.
- d. no correct answer.

11. The human ear can distinguish sounds of frequency

- a. 50 KHz.
- b. 30 KHz.
- c. 300 KHz.
- d. 50 Hz.

12. The colour light in the spectrum colours has the highest deviation.

- a. white
- b. red
- c. violet
- d. yellow

13. The photon energy= Plank's constant x

- a. wavelength.
- b. velocity.
- c. amplitude.
- d. frequency.

14. The sound of frequency 500 Hz is than the sound of frequency 100 Hz.

- a. stronger
- b. sharper
- c. weaker
- d. harsher

15. The angle of incidence of light is its angle of reflection.

- a. larger than
- b. smaller than
- c. equal to
- d. no correct answer

16. The human ear can distinguish sounds of frequency

- a. 50 KHz.
- b. 30 KHz.
- c. 200 Hz.
- d. 5 Hz.

17. If the angle between the incident light ray and the reflected light ray is 90° , so the angle of incidence equals

- a. 0°
- b. 90°
- c. 45°
- d. no correct answer

18. The sound velocity is maximum in

- a. vacuum.
- b. gases.
- c. liquids.
- d. solids.

19. waves are longitudinal waves.

- a. Water
- b. Light
- c. Sound
- d. Radio

20. If the angle between the incident light ray and the reflected light ray is 30° so, the angle of reflection is

- a. 30
- b. 15
- c. 60
- d. 40

21. All of the following are factors affecting sound intensity except

- a. amplitude of vibration.
- b. frequency.
- c. medium density.
- d. wind direction.

22. A medium that prevents light to pass through it is called medium.

- a. transparent b. translucent c. opaque d. no correct answer

23. The submerged object in water as a fish is seen in an apparent position slightly above its real position due to of the light rays.

- a. refraction b. reflection c. analysis d. total internal reflection

24. White light analyzes into spectrum colours.

- a. 3 b. 5 c. 7 d. 9

25. The measuring unit of wave velocity is

- a. metre. b. metre/sec. c. Hz. d. sec.

26. The doctors use waves with a frequency to break down kidney stones.

- a. less than 20 Hz b. 20 Hz c. more than 20 KHz

27. Sound intensity in air is that in carbon dioxide.

- a. less than b. more than c. equal to

28. The absolute refractive index of any material is always one.

- a. less than b. more than c. equal

29. In reflection, the reflected rays are reflected in many directions.

- a. uniform b. irregular c. both (a) and (b)

30. All of these sounds are of uniform frequency except the sound of

- a. piano. b. violin. c. loudspeakers. d. guitar.

31. All the following are electromagnetic waves except waves.

- a. light b. sound c. infrared d. radio

32. The voice of Adam differs from that of Sara because they are different in

- a. age. b. intensity. c. pitch. d. kind.

33. The quantum of energy of green light is the quantum of energy of yellow light.

- a. greater than b. equal to c. smaller than d. no correct answer

34. Plank's constant= the photon energy divided by photon

- a. frequency. b. density. c. wavelength. d. amplitude.

35. Doctors use waves of a frequency to break down kidney and ureter stones.

- a. more than 20 Hz b. less than 20 KHz
c. 20 Hz d. more than 20 KHz

36. The sound velocity is measured in unit.

- a. Hertz b. m/sec. c. decibel d. metre

37. The human skin is considered as a/an medium.

- a. transparent b. opaque c. translucent d. no correct answer

38. If the light speed in air is higher than that in another transparent medium, so the refractive index is

- a. zero b. 1 c. more than 1 d. less than 1

39. Two gears of Savart's wheel rotate at a same velocity, if the number of teeth of the first gear is 90 teeth and the number of the second is 60 teeth, then the ratio between their frequencies is

- a. 1 : 2 b. 3 : 2 c. 2 : 1 d. 5 : 2

40. If a light ray falls from water to air with an angle of incidence 35° , then the angle of refraction will be

- a. 47.5° b. 35° c. 28.5° d. 29.5°

41. The measuring unit of noise intensity is

- a. decibel. b. Hz. c. watt/m² d. metre.

42. A pencil seems broken when it is placed in a glass cup of water due to of light.

- a. critical angle b. mirage c. refraction d. reflection

43. The angle of incidence of light ray is 30° , so the angle of reflection is

- a. 30° b. 60° c. 90°

44. The human ear cannot hear sound of frequency

- a. 50 Hz. b. 300 Hz. c. 10 Hz.

45. Velocity of sound in air equals m/s.

- a. 340 b. 1500 c. 3×10^8

46. A natural phenomenon takes place on the desert roads at noon due to reflection and refraction of the light

- a. lightning. b. thunder. c. mirage. d. rainbow.

47. The absolute refractive index of any material is always

- a. more than one. b. less than one. c. equal to one. d. equal zero.

48. The amplitude of the harmonic tone is that of fundamental tone.

- a. smaller than b. larger than
c. equal to d. (a) and (b) are correct.

49. The frequency of the oscillating body is measured by a unit called

- a. Hertz. b. Watt/m² c. Decibel. d. m/sec.

50. The angle between the incident light ray and the reflected light ray is 40°, so the angle of reflection is

- a. 20° b. 40° c. 80° d. 90°

51. if the distance between the sound source and the ear increased 3 times so the sound intensity

- a. decreases to half. c. decreases to 1 /3.
b. increases 3 times. d. decreases to 1 /9.

52. When the incident ray falls perpendicular on a reflecting surface, the angle of reflection equals

- a. 120° b. 0° c. 90° d. 60°

53. The submerged object in water is seen in an apparent position slightly above its real position due to of light.

- a. reflection b. interference c. diffraction d. refraction

54. Sound waves travel through

- a. solids. b. liquids. c. gases. d. (a) , (b) and (c) .

55. The distance that light travels in a second is

- a. light frequency. b. light speed.
c. light intensity. d. no correct answer.

56. Sound waves do not travel through

- a. water. b. air. c. vacuum. d. wood.

57. The frequency of sound produced from a plate touching a gear of 20 teeth in Savart's wheel when the wheel rotates 300 cycle/minute equals Hz.

- a. 300 b. 15 c. 6000 d. 100

58. A regular reflection happens when light rays fall on

- a. a woolen jacket. b. a stainless steel sheet.
c. a leaf of a tree. d. a piece of leather.

59. The frequency of the sound produced from Savart's wheel depends on

- a. the speed of rotation of the gear only.
b. the distance between the gear and you only.
c. the number of gear's teeth only.
d. (a) and (c) are correct.

60. The scientific term that expresses the strength and the weakness of sound is

- a. the frequency of sound. b. the pitch of sound.
c. the quality of sound. d. the intensity of sound.

61. The measuring unit of sound intensity is

- a. m/sec. b. watt/m² c. decibel. d. Hertz.

62. Light is reflectedwhen it falls on a rough surface.

- a. regularly b. irregularly c. and refracted d. in one direction

63. The resonance box increases the intensity of sound because it

- a. decreases the vibrating surface area.
b. increases the vibrating surface area.
c. increases the frequency of the produced sound.
d. decreases the pitch of the produced sound.

64. The main source of light on the Earth's surface is the

- a. Sun. b. moon. c. star. d. candle.

65. White light consists of spectrum colours.

- a. four b. six c. seven d. eight

66. colour has the lowest deviation.

- a. Violet b. Green c. Red d. Yellow

67. The colour in the spectrum colours has the highest frequency.

- a. violet b. green c. red d. yellow

68. Media that we can see objects less clearly through are called

- a. opaque media. b. transparent media.
c. translucent media. d. spectrum colours.

69.media don't allow light to pass through.

- a. Transparent b. Translucent c. Opaque d. (a) and (b)

70. All of the following are examples of transparent media except

- a. air. b. tissue paper. c. glass. d. clear water.

71. The angle between the reflected ray and the line perpendicular to the reflecting surface at the point of incidence is called the angle of

- a. emergence. b. incidence. c. refraction. d. reflection.

72. The ability of the transparent medium to refract the light is called the of the medium.

- a. refractive index b. density c. optical density d. viscousity

Model answer

1. A	10.A	20.B	30.C	40.A	50.A	60.D	70.B
2. B	11.D	21.B	31.B	41.A	51.D	61.B	71.D
3. A	12.C	22.C	32.C	42.C	52.B	62.B	72.C
4. C	13.D	23.A	33.A	43.A	53.D	63.B	
5. B	14.B	24.C	34.A	44.C	54.D	64.A	
6. A	15.C	25.B	35.D	45.A	55.B	65.C	
7. B	16.C	26.C	36.B	46.C	56.C	66.C	
8. D	17.C	27.A	37.B	47.A	57.D	67.A	
9. A	18.D	28.B	38.C	48.A	58.B	68.C	
	19.C	29.B	39.B	49.A	59.D	69.C	

Science
Second Preparatory
Second Term

Unit **TWO**

Lesson **ONE**

QUESTIONS

1 - Write the definition of each of the following :

1 - Sound :.....
.....

2 - Sound velocity :.....
.....

3 - Sound pitch :.....
.....

4 - Sound intensity :.....
.....

5 - Noise intensity :.....
.....

6 - Decibel :.....
.....

7 - The inverse square law of sound :.....
.....

8 - Sound quality (type) :.....
.....

9 - Harmonic tones :.....
.....

10 - Infrasonic waves :.....
.....

11 - Sonic waves :.....
.....

12 - Ultrasonic waves :.....
.....

2 - What is meant by :

1 - Wavelength of a sound waves is 1.5 m?.....
.....

2 - Wave velocity of sound waves is 340 m/sec?.....

3 - Write the scientific term for each of the following :

- 1 - The external factor which affects the ear causing the sense of hearing
- 2 - Longitudinal waves produced due to the vibration of bodies and stop when the vibrating bodies stop their vibration
- 3 - The distance which is covered by the sound waves in one second
- 4 - A tone of regular frequency that is produced from reed pipe
- 5 - A tone of irregular frequency that is produced from loudspeakers
- 6 - The material used for making ear plugs
- 7** - A property of sound by which the ear can distinguish between sharp and rough sounds
- 8 - A sound property that is directly proportional to the frequency of the sound source
- 9 - An instrument used to determine the frequency of unknown sound tone
- 10 - A characteristic by which the ear can differentiate between strong and weak sounds
- 11 - The measuring unit of the sound intensity
- 12 - The measuring unit of noise intensity
- 13 - The intensity of sound at a point is inversely proportional to the square of the distance between that point and the sound source
- 14 - A property of sound that is directly proportional to the square of the amplitude of vibration of the sound source
- 15** - A property by which the human ear can distinguish (differentiate) between sounds according to the source even they are equal in pitch and intensity
- 16** - They are tones that accompany the fundamental (basic) tone, but they are lower in intensity and higher in pitch and differs from one instrument to another
- 17** - Sound waves of frequencies less than 20 Hertz

- 18 – The sound waves which accompany the blowing of storms that preceding rainfall
- 19 – Sound waves of frequencies ranging between 20 Hz to 20000 Hz (20 KHz)
- 20 – Sound waves of frequencies more than 20000 Hz (20 KHz)
- 21 – Sound waves which are used in breaking kidney and ureter's stones
- 22 – Sound waves used for sterilization of the food and water

4 – Mention the unit(s) used for measuring each of :

- 1 – Sound waves velocity (.....)
- 2 – Sound frequency (.....)
- 3 – Sound wavelength (.....)
- 4 – Sound intensity (.....)
- 5 – Noise intensity (.....)

5 – Mention the mathematical relation (formula) for :

- 1 – Frequency, sound velocity and wavelength
-

- 2 – The sound frequency and the number of teeth of the gear in Savart's wheel
-

6 – Complete the following sentences :

- 1 – Sound originates from.....of bodies
- 2 – Sound is considered from.....waves, as it needs a medium to travel through
- 3 – Sound waves propagates through the medium as.....of.....and.....
- 4 – Sound wave velocity = X

- 5 - Velocity of sound through solids is.....than that through gases and its velocity through gases is.....than that through liquids
- 6 - Sound wave which propagates through air with a velocity 340 m/sec and of frequency of 20 Hertz, its wavelength equals.....
- 7 - Sounds can be classified into 2 groups, musical tones of.....frequency and noise offrequency
- 8 - Musical tone is a sound of.....frequency which is produced from.....and.....
- 9 - Noise is a sound of.....frequency which is produced from.....and.....
- 10 - Ear plugs are made of.....are used to avoid the hazards of.....in loud places
- 11 - The human ear can distinguish between the sounds through different factors, which are sound....., sound.....and sound.....
- 12 - The sound pitch is a property by which the ear can distinguish between.....andvoices
- 13 - Sound of women (sparrows) is....., so it is said that it has.....pitched sound
- 14 - Sound of men (lions) is....., so it is said that it has.....pitched sound
- 15 - Sharp tones have.....frequencies, while rough tones have.....frequencies
- 16 - The frequency of the vibrating string is.....proportional to its length
- 17 - Savart's wheel is used to determine the.....of unknown sound tone
- 18 - In Savart's wheel, frequency = $\frac{\text{.....} \times \text{.....}}{\text{.....}}$
- 19 - When turning Savart's wheel with a speed of 600 rotations/minute, using a gear of 30 teeth, the frequency of the produced sound is.....
- 20 - In Savart's wheel by using the same gear, the sound produced will be sharper by increasing its.....
- 21 - Shouting is a sound of.....intensity, while whispering is a sound of.....intensity
- 22 - The intensity of sound at a certain point is measured by the amount of sound fallingin one second on a.....at this point

23 - The measuring unit of sound intensity is....., while that of noise intensity is.....

24 - From the factors affecting the sound intensity are.....and.....

25 - The sound intensity at a point is.....proportional to the square of the distance between that point and the sound source which is known as.....

26 - When the distance between the sound source and the ear.....two times, the sound intensity decreases.....times

27 - When the distance between the sound source and the ear is doubled, the sound intensity.....four times

28 - When the amplitude of sound wave vibration is doubled, the intensity of sound..... four times

29 - The sound intensity.....by decreasing the density of the medium and.....when the vibrating body touches a.....box

30 - The intensity of the sound.....when the sound waves propagation direction in the opposite direction of wind

31 - The.....of sound is a property by which the ear can distinguish between sounds of different sources even they are equal in.....and.....

32 - The human ear can distinguish between sound from sources which are similar in frequency and intensity due to.....tones which associate the.....tone

33 - The fundamental tone is lesser in.....and higher.....than the harmonic tones

34 - The frequency of sonic waves ranges between.....Hz and.....Hz, while the frequency of infrasonic waves is.....Hz and also the frequency of ultrasonic waves isHz

35 - The human ear can't detect the sound waves of frequencies less than.....and that of frequencies higher than.....

36 - Some animals as.....and.....can hear the ultrasonic waves

37 -sound waves accompany the blowing of storms that preceding rainfall

38 -waves are used in medical diagnosis and breaking.....and.....stones

7 - Give reason for each of the following :

- 1 - Sound waves are longitudinal mechanical waves?.....
- 2 - Sound can be heard from all surrounding directions?.....
- 3 - The guardian dog put its ears on the ground when it sleeps at night?.....
- 4 - The difference in frequency between the tone and noise?.....
- 5 - The sound of violin, piano and reed pipe are comfortable to be heard?.....
- 6 - The sound of drill and loudspeaker is uncomfortable to be heard?.....
- 7 - The tuning fork of frequency 251 Hz gives rougher sound that is produced by another tuning fork of 512 Hz?.....
- 8 - The violin's player changes the length of string during his play?.....
- 9 - The intensity of sound decreases four times as the distance between the ear and the source is doubled?.....
- 10 - The sound intensity decreases as the amplitude of the vibrating source decreases?.....
- 11 - The intensity of sound increases when the sound source touches a resonance box?
The strings of a musical lute are fixed on a hollow wooden box?.....
- 12 - Sound travelling through air has less intensity than that travelling through carbon dioxide gas?.....

13 – Piano's sound differs from that of a violin even if they have the same intensity and pitch?.....

14 – The infrasonic waves are used for weather forecast?.....

15 – Man can't hear all sounds produced by dolphins?.....

16 – The use of ultrasonic waves in milk sterilization?

Ultrasonic waves are used to sterilize food and water?.....

8 – What happens when :

1 – Both the frequency and the velocity of wave propagation decreases to half its value (concerning the wavelength)?.....

2 – You decrease the length of violin string during playing?

The number of rotations per second of Savart's wheel increases?.....

3 – The distance between the sound source and the ear increases twice?.....

4 – The amplitude of a sound wave decreases to half?.....

5 – You put a vibrating tuning fork on a resonance box?.....

6 – Operating an electric bell under a bell jar connected to a vacuum pump, then pump the air out of the jar gradually?.....

7 – Frequency of sonic waves decreases less than 20 Hz (increases more than 20KHz)?.....

9 – Choose the correct answer :

1 – The sound produced from the school's bell is considered from.....waves

- a. longitudinal
- b. transverse
- c. electromagnetic
- d. longitudinal and transverse

2 – Sound waves travel through.....

- a. solids
- b. liquids
- c. gases
- d. (a), (b) and (c)

3 – Sound waves don't travel through.....

- a. water
- b. air
- c. vacuum
- d. wood

4 – All the following indicate the nature of sound waves except.....

- a. it is from mechanical longitudinal waves
- b. it propagates as spheres of compressions and rarefactions
- c. its velocity through air is 430 m/sec
- d. no correct answer

5 – Before using the modern technology in communication, people in desert were putting their ears on the ground to hear the sound of horses of their enemies at very far places because.....

- a. sense of hearing is stronger than sense of vision
- b. the velocity of sound through solids (ground) is greater than that through air
- c. sound travels faster than light
- d. sound of horses' feet is very loud

6 – The sound velocity is measured in.....unit

- a. Hertz
- b. metre
- c. decibel
- d. metre/ second

7 – Sound wave that propagate through air with velocity 330 m/sec and of wavelength 0.1 m, its frequency equals.....

- a. 330 kilo Hertz
- b. 3300 Hertz
- c. 33 kilo Hertz
- d. 330 Hertz

8 – All of these sound are of uniform frequency except the sound of.....

- a. violin
- b. guitar
- c. loudspeakers
- d. piano

9 – The human ear can distinguish between the voice of the man and that of the woman because.....

- a. the voice of the woman is often high pitch and sharp
- b. the voice of the woman is often low pitch and sharp
- c. the voice of the woman is often high pitch and rough
- d. the voice of the man is often high pitch and sharp

10 – The voice of Adham differs from that of Judy because they are different int.....

- a. age
- b. intensity
- c. pitch
- d. kind

11 – The sound pitch increases by.....

- a. the decreases of frequency
- b. the increases of frequency
- c. the decrease of length of the vibrating source
- d. (b) and (c)

12 – The sound of frequency 200 Hz is.....than the sound of frequency of 100 Hz

- a. stronger
- b. sharper
- c. weaker
- d. harsher

13 – The frequency of the vibrating string.....to its length

- a. equals
- b. is directly proportional
- c. is inversely proportional
- d. has no direct relation

14 – We can prove that the pitch of sound depends on the frequency of the vibration of the sound source using.....with knowing number of cycles and gear teeth

- a. the resonance box
- b. Savart's wheel
- c. a stretched string of a fixed length
- d. the tuning fork

15 – The frequency of the sound produced from Savart's wheel depends on.....

- a. the speed of rotation of the gear only
- b. the distance between the gear and you only
- c. the number of gear's teeth only
- d. (a) and (c) are correct

16 – As the number of teeth of the gear in Savart's wheel increases, the.....of the sound increases

- a. amplitude
- b. intensity
- c. frequency
- d. quality

17 – As the velocity of rotation of the gear in Savart's wheel decreases, the frequency decreases, consequently the.....of the sound decreases

- a. pitch
- b. type
- c. amplitude
- d. intensity

18 – A student rotates Savart's wheel with different velocities, the velocity which gives rough sound is.....

- a. 20 rotations/sec
- b. 300 rotations/minute
- c. 6 rotations/sec
- d. 10 rotations/sec

19 – The frequency of a sound produced from a plate touching a gear of 20 teeth in Savart's wheel when the wheel rotates 300 cycles/minute equals.....Hz

- a. 300
- b. 15
- c. 6000
- d. 100

20 – The scientific term that is used to express the strength and the weakness of the sound is.....

- a. the frequency of the sound
- b. the pitch of the sound
- c. the intensity of the sound
- d. the type of the sound

21 – The measuring unit of sound intensity is.....

- a. m/sec
- b. Watt/m²
- c. Decibel
- d. Hertz

22 – All the following are factors affecting sound intensity except the.....

- a. amplitude of the vibration
- b. medium density
- c. frequency
- d. wind direction

23 – The sound intensity is directly proportional to.....

- a. the square of the distance from the source
- b. the square of the amplitude
- c. the distance from the source
- d. no correct answer

24 – The intensity of the sound becomes weak as we go away from its source as.....

- a. $I \propto d_2$
- b. $I \propto 1/d^2$
- c. $I \propto d$
- d. $I \propto 1/d$

25 – When the distance between the sound source and the ear is doubled, the sound intensity.....

- a. decreases two times
- b. decreases four times
- c. decreases to quarter
- d. (b) and (c) are correct

26 – The resonance box increases the sound intensity as it.....

- a. decreases the vibrating surface area
- b. increases the vibrating surface area
- c. Increases the frequency of the produced sound
- d. Increases the pitch of the produced sound

27 – The intensity of sound through CO_2 is.....than that in air

- a. more than
- b. less than
- c. equal to
- d. half

28 – Sounds of different musical instruments can be differentiated by their.....

- a. frequency
- b. pitch
- c. harmonic tones
- d. fundamental tones

29 – Harmonic tones are.....than fundamental tones

- a. higher in pitch and intensity
- b. higher in pitch and lower in intensity
- c. higher in intensity and higher in pitch
- d. lower in pitch and higher in intensity

30 –waves are non-audible sounds.

- a. Infrasonic
- b. Ultrasonic
- c. Sonic
- d. (a) and (b)

31 – The human ear can hear sounds of frequency.....

- a. 50 kHz
- b. 30 kHz
- c. 300 Hz
- d. 10 Hz

32 – A sound wave of frequency 30000 cycle/sec. is called.....wave

- a. sonic
- b. infrasonic
- c. ultrasonic
- d. radio

33 – The dolphin's trainer used a whistle producing a sound which can be heard by dolphins and can't be heard by man, the frequency of such sound equals.....Hertz

- a. 20
- b. 2000
- c. 1000
- d. 25000

34 – Ultrasonic waves are used in.....

- a. breaking down kidney and ureter stones
- b. discovering landmines
- c. sterilizing food
- d. (a),(b) and (c)

35 – Doctors use waves of frequency of.....to break down kidney and ureter's stones

- a. less than 20 Hz
- b. equal to 20 Hz
- c. more than 20 kHz

10 – What is the importance (use) of :

1 – Ear plugs :

2 – Savart's wheel :

3 - Ultrasonic waves in **medical** fields :

- a.
- b.
- c.

4 - Ultrasonic waves in **industrial** fields :

5 - Ultrasonic waves in **military** fields :

II - Cross the odd word out, then write scientific term :

1 - Sound of tuning fork - Sound of violin - Sound of loudspeaker (.....)

The scientific term :

2 - Sound intensity - Sound velocity - Sound pitch - Sound type (.....)

The scientific term :

3 - Voice of man - Voice of lion - Voice of woman (.....)

The scientific term :

12 - Put (✓) or (x) then correct the false statement :

1 - Sound is produced due to the vibration (oscillation) of objects (.....)

2 - Sound is from electromagnetic longitudinal waves (.....)

3 - Sound propagates through medium as pulses of compressions and rarefactions (.....)

4 - The sound velocity is constant through different media (.....)

5 - The sound velocity through liquids is less than that through gases (.....)

6 - If the speed of sound through air = 340 m/sec and the frequency of a vibrating body = 170 Hertz, so the wavelength = 2 metres (.....)

7 - Musical tones are sounds of irregular frequency (.....)

- 8 – The human ear can distinguish between sounds through two different factors only which are sound pitch and sound type (.....)
- 9 – As the length of the vibrating string decreases, the frequency of the produced tone increases (.....)
- 10 – The sound quality is a property by which the air can distinguish between strong and weak sounds (.....)
- 11 – The type of sound depends on the distance between the ear and the sound source (..)
- 12 – The sound intensity becomes fainter gradually as we move towards the source of sound (.....)
- 13 – The sound intensity decreases, when the source of sound touches an empty box (.....)
- 14 – Sound intensity through air is more than through CO₂ (.....)
- 15 – The intensity of sound will be stronger, if sound direction is against the air flow (....)
- 16 – The human ear can distinguish between sounds of different sources of the same frequency and intensity from their fundamental tones (.....)
- 17 – Sonic waves have frequencies ranging from 20 Hz to 20000 Hz (.....)
- 18 – Sonic waves are used in sterilizing food substances (.....)
- 19 – Sound wave of frequency 15000 Hz is audible sound (.....)

13 – What do these relations indicate ?

- 1 – $\frac{\text{Distance covered by a sound wave}}{\text{Time in seconds}}$ (.....)
- 2 – **Sound wave frequency \times Wavelength** (.....)
- 3 – $\frac{\text{Number of rotations}}{\text{Time in seconds}} \times \text{Number of gear teeth}$ (.....)
- 4 – **Sound intensity $\propto \frac{1}{\text{Square of the distance from the ear}}$** (.....)

14 – Problems :

A – Sound velocity (V) :

1 – A sound source produces 3600 cycles in 3 minutes. If its wavelength is 17 metres. Find the velocity of the sound waves

.....

.....

.....

2 – Calculate the wavelength of a sound wave of frequency 17 Hz, if the distance travelled by this waves in one second is 340 metres

.....

.....

.....

B – Savart's wheel :

1 – Find the frequency of turning Savart's wheel with a speed of 600 rotations/minute, using a gear of 30 teeth

.....

.....

.....

2 – Savart's wheel produces a sound of frequency 200 Hz when a metallic plate touches a gear having 50 teeth. Find the time in minutes taken by the wheel to make 360 rotations

.....

.....

.....

3 – Find the number of rotations in 2 minutes made by a Savart's wheel producing sound of frequency 300 Hz, if a metallic plate touches one gear of 100 teeth

.....

.....

.....

4 – Savart's wheel rotates with a rate of 300 cycles per minute. A sound of frequency 600 Hz is produced when an elastic plate touch the teeth of one gear. Calculate the number of teeth of the gear

5 – Calculate the number of gear's teeth of Savart's wheel, given that the frequency of the sound produced is 100 Hz and the wheel rotates 30 cycles/min

6 – Calculate the wavelength of a wave produced by a tuning fork that vibrates in air, if its tone is matched with a tone produced from Savart's wheel which rotates 1800 cycles/ 2 minutes. Knowing that the number of gear teeth is 34 teeth

7 – If the teeth number of a Savart's wheel gear is 50 teeth and it rotates 300 cycles/min to produce a certain tone. What is the number of rotations 1.5 min of another wheel to produce the same tone if its gear number is 60 teeth?

8 - Calculate the **ratio** between the **two frequencies** of **two different tones** produced from **Savart's wheel** at the **same period** of **time**. If you know that the **number of teeth** of the **two gears** of the wheel is **60 and 80** and the **number of cycles** of each of them is **80 and 90 respectively**

C – Sound intensity (inverse square law of sound) :

1 - Calculate the **ratio** between the **sound intensity** at two points far from the sound source by **2 m** and **6 m**?

2 - If the **sound intensity** of a sound produced from a source at a distance (d) metre from a person = (I) watt/m². So the **sound intensity** at a distance (1/2 d) =.....I

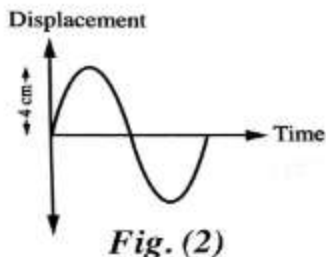
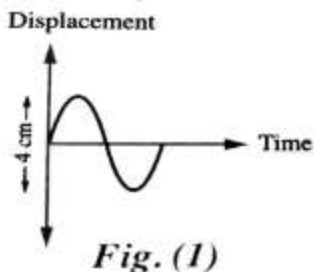
a. $\frac{1}{4}$

b. $\frac{1}{2}$

c. 1

d. 4

3 - The two opposite figures represent two sound waves. Calculate the **ratio** between the **sound intensities** between them



D – Variant :

1 – A dolphin produces sound waves in the air their frequencies ranges from 10 KHz to 120 KHz. Calculate :

- The **velocity** of the **sharpest** sound wave that the dolphin produces
- The **shortest wavelength** of sound wave that the dolphin produces
- The **wavelength** of the **harshes**t sound wave that the dolphin produces in **water**

(Knowing that the **velocity** of sound in water is 1500 m/sec)

15 – Answer the following questions :

1 – Suppose that there is an **electromagnetic wave** and another **sound wave** that has the **same frequency**. Which of them has **longer wavelength**? **Why**?

2 – Fatma rotates 3 **toothed gears** of Savart's wheel which **differ** in the **number** of their **teeth** and she touches each gear by a **thin metal plate**

Gear	The first	The second	The third
Number of teeth	50	90	115

- The **roughest** sound is produced when the metal plate touches the.....gear
- Calculate the **frequency** of the produced sound when a **metal plate** touches the second gear which has 90 **teeth** and rotates by a rate of 200 **cycles/min**

3- Savart's wheel consists of 4 serrated gears and the **distances** between its teeth are **equal**, If you know that the radii are 3, 6, 9, 12 cm **respectively**. Which gear produces the **sharpest** sound when it touches a metal plate while rotating at a regular speed

.....

.....

.....

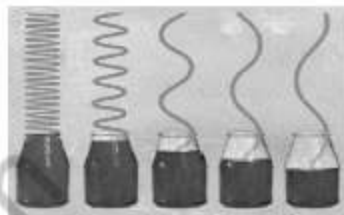
4 - When blowing in the bottles, when you can hear **low** pitched sound? (Give reason)

.....

.....

.....

.....



5 - Mention the **factors** affecting the **sound intensity** (mention the relation)

.....

.....

.....

.....

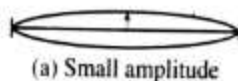
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6 - Zeyad pulled a stretched string from the middle :

- Zeyad notice that sound intensity is **stronger** at case.....
- What did Zeyad conclude?.....

.....

.....



(a) Small amplitude



(b) Large amplitude

7 - Raghad knocked on a tuning fork which installed on a **resonance box**, then she **repeated** this step **without** using the **resonance box**

Is this **difference** in the **sound pick** or **sound intensity**? (G.R)

.....

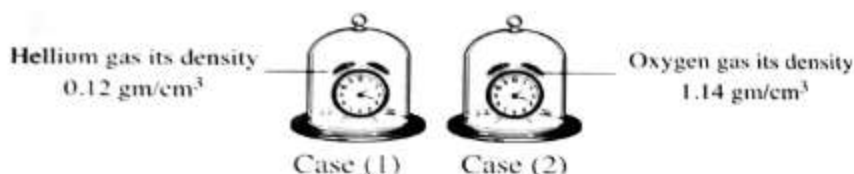
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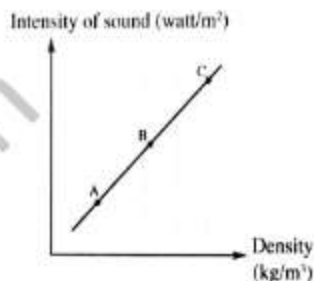
8 – Compare between the sound intensities in the two following cases. (Give reason)



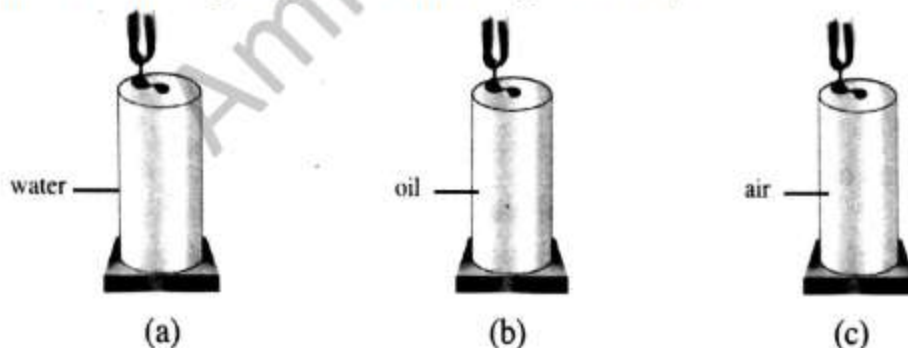
9 – During an experiment to find the **relation** between the **densities** of media (A,B and C) and the **intensity** of the sound.

Complete the following sentences :

- The **medium** which gives **stronger** sound is.....
- The **medium** which gives **faint** sound is.....



10 - **Three jars** of volume 100 cm^3 , the 1st jar is full of **water** of density 1 gm/cm^3 , the 2nd is full of **oil** of density 0.8 gm/cm^3 and the 3rd is full of **air** of density 0.01 gm/cm^3 . Tab a tuning fork of known frequency and touch the stopper of each jar, so :



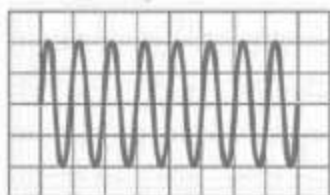
- The sound of the **highest** intensity is the jar number (Give reason).....
- The **factor** affecting the **intensity** of the sound in this case is.....

11 – Give reason : The **intensity** of **sound** when firing a shot at the **top** of a **mountain** is **less than** that **one** the **base** of the **mountains**?

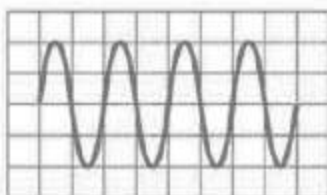
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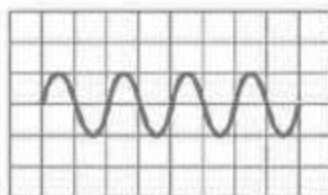
12 - Compare between these **waves** according to (sound **pitch** – Sound **intensity**)



Wave (A)



Wave (B)



Wave (C)

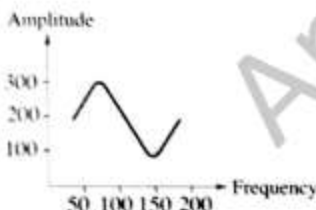
a. Sound wave (A) and (B)

- Sound **pitch** :
- Sound **intensity** :

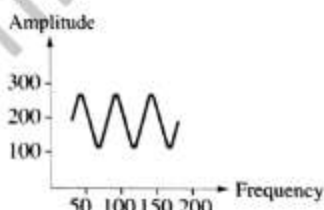
b. Sound wave (B) and (C)

- Sound **pitch** :
- Sound **intensity** :

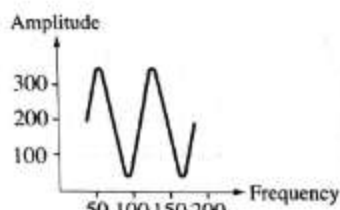
13 – The following figures refer to **three different sound waves** :



(a)



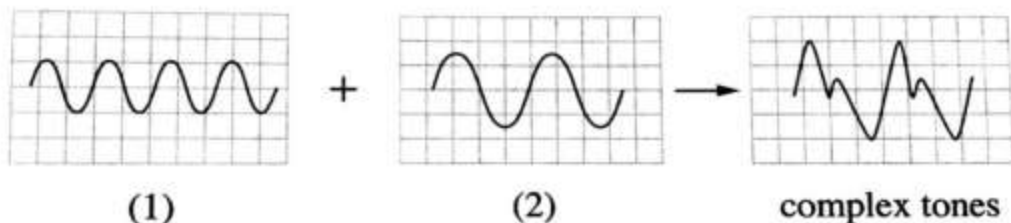
(b)



(c)

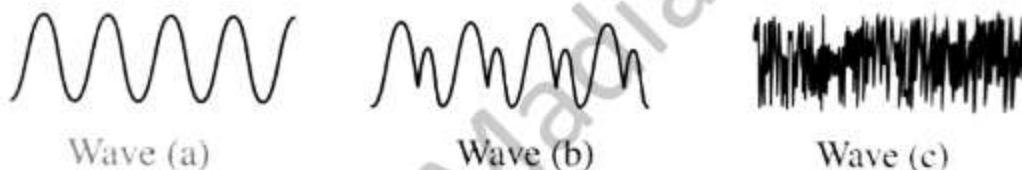
- a. Which figure has the **largest** amplitude?
- b. Which figure represents a **sharper** tone? Why?
- c. Which figure represents a **harsher** tone? Why?
- d. Which figure represents a sound of a **higher** intensity? Why?
- e. Complete :
 - As the **amplitude** increases, the sound becomes.....
 - As the **frequency** decreases, the sound becomes.....

14 – Complete the following statements after studying the figure well : (Give reason)



- Number (1) represents :.....because.....
- Number (2) represents :.....because.....

15 – The following figures refer to three different sound waves :



Choose from these waves, the wave that produced from.....(Give reason)

- a. Tuning fork :
- b. Hammer :
- c. Musical instrument :

16 – Compare between the following :

P.O.C	Infrasonic waves	Sonic waves	Ultrasonic waves
Definition
Audible or non-audible
Example

17 – Study the given table, then answer the following questions :

1. Complete the following :

- The frequency of the point (X) is.....Hz
- The frequency of the point (Y) is.....Hz

Area	Waves
3	Ultrasonic waves
2	Sonic waves
1	Infrasonic waves

2. Choose the correct answer :

- Frequency is.....in area (1)
 - a. 15 Hz
 - b. 22 Hz
 - c. 2000 Hz
 - d. 25000 Hz
- Frequency is.....in area (2)
 - a. 15 Hz
 - b. 22 Hz
 - c. 2000 Hz
 - d. 25000 Hz
- Frequency is.....in area (3)
 - a. 15 Hz
 - b. 22 Hz
 - c. 2000 Hz
 - d. 25000 Hz
- Dogs and dolphins can hear.....waves
 - a. infrasonic
 - b. sonic
 - c. ultrasonic
 - d. (a) and (b)
- Bats can hear.....waves
 - a. Infrasonic
 - b. Sonic
 - c. ultrasonic
 - d. (a) and (b)
- Medical diagnosis instruments are made by using waves is.....area
 - a. first
 - b. second
 - c. third
 - d. (a) and (b)

18 – A person stands near an apparatus produces different sounds with frequencies of :

(10 Hz – 15 Hz – 25 Hz – 50 Hz – and 25000 Hz)

Which of these sounds can be heard by man? Why?

.....

.....

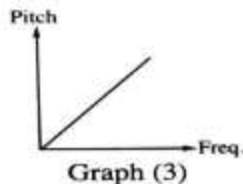
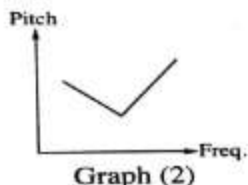
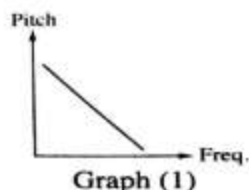
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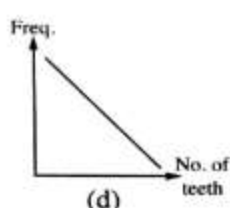
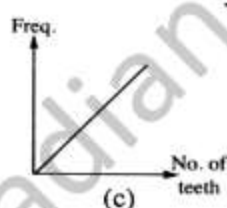
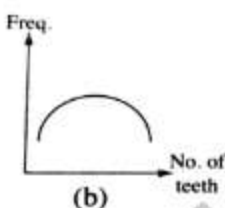
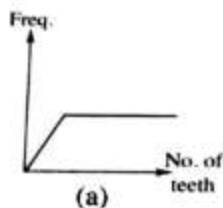
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16 – Choose the correct graph :

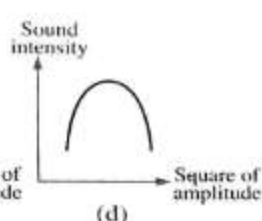
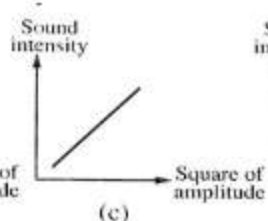
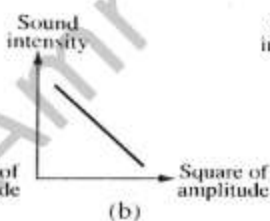
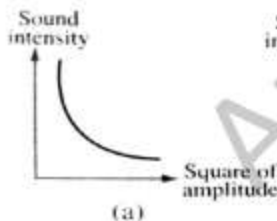
1 – Which of the following graphs represents the relation between the **pitch** of a sound and its **frequency**? Why?.....



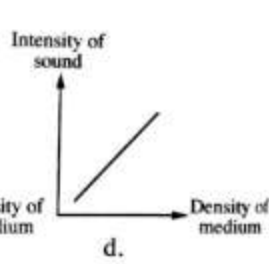
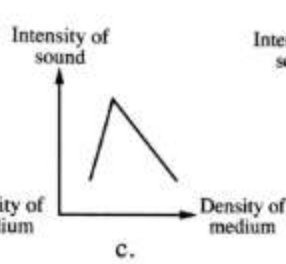
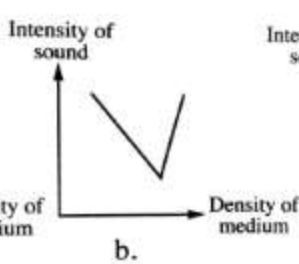
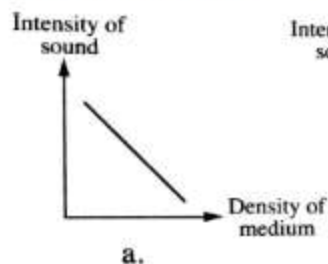
2 – In Savart's wheel, which of the following graphs represents the relation between the **frequency** and the **number of gear's teeth** at a constant speed?



3 – Which of the following figures represents the relation between the **intensity** of sound and square of the **amplitude**?



4 – Which of the following graphs represents the relation between the sound **intensity** and the **density** of the medium?



17 – What are the results based on :

1 – Passing a sound in CO_2 and air? (Concerning sound intensity)? why?

.....

.....

.....

.....

2 – Increasing the number of sound waves and decreasing their amplitudes? (Concerning sound pitch and sound intensity respectively?

.....

.....

.....

.....

Amr Madian

THANK YOU

Science
Second Preparatory
Second Term

Unit TWO

Lesson TWO

QUESTIONS

1 - Write the definition of each of the following :

- 1 - Light :.....
.....
- 2 - Speed of light :.....
.....
- 3 - The visible light :.....
.....
- 4 - Analysis of light :.....
.....
- 5 - Light intensity :.....
.....
- 6 - The inverse square law of light :.....
.....

2 - What is meant by :

- 1 - Wavelength of a light wave is 1.5 m ?.....
.....
- 2 - Wave velocity of light waves is $3 \times 10^8 \text{ m/sec}$?.....
.....

3 - Write the scientific term for each of the following :

- 1 - Electromagnetic waves stimulate the sense of vision when they reach the eye
- 2 - The distance covered by light in one second
- 3 - One of the components of the electromagnetic spectrum of wavelength ranges between 380: 700 nanometers
- 4 - The main source of light energy on the Earth's surface
- 5 - The splitting of white light into seven colours

6 – A **structure** used in the analysis of light

7 – A **mixture** of seven spectrum colours

8 – **Seven colours** are produced as a result of splitting the white light

9 – A colour that has the lowest energy, lowest frequency and longest wavelength

A colour that has the least deviation and it is the closest to the prism apex

10 – A colour that has the highest energy, highest frequency and shortest wavelength

A colour that has the highest deviation and it is the closest to the prism base

11 – The scientist who proved that the energy of the photon depends on its frequency

12 – A physical quantity equals plank's constant multiplied by frequency

13 – Media allow the passage of light through them

14 – Media allow the passage of a part of light through them and absorb the remaining part

15 – Media don't allow the passage of light through them

16 – The amount of light falling perpendicular to a unit area of a surface in one second

17 – The light intensity of a surface is inversely proportional to the square of the distance between the surface and the source of light

4 – Complete the following sentences :

1 – Light is.....waves that travel through **space (vacuum)**

2 – Light waves consist of.....and.....

3 – Light velocity is the distance.....

4 – The velocity of light through space is.....**m/sec** or.....**km/sec**

5 – Visible light is one of the components of the electromagnetic spectrum of wavelength ranges between : nanometers

6 –is the main source of light on the Earth's Surface

- 7 - While light consists of.....colours, which are....., yellow,.....,, indigo,.....
- 8 - The **glass prism** is used to analyze the.....light into.....colours
- 9 -is the nearest colour to the prism **apex**, so it has the.....deviation, while.....is the nearest colour to the glass **base**, so it has the.....deviation
- 10 - The scientist.....proved that the energy of light waves is composed of energy quanta known as.....
- 11 - The energy of the photon is.....proportional of the.....of the light wave
- 12 - Energy of photon =X.....
- 13 - The frequency of blue colour is.....than the frequency of yellow colour, so the energy of yellow light photon is.....than the energy of blue light photon
- 14 - Light is used in home decoration like.....to illuminate artifacts and.....to concentrate light for reading
- 15 - Media are classified according to their ability to allow light to pass through into.....medium,.....medium and.....medium
- 16 - The medium which allows most light to pass through is called.....
- 17 -and.....are examples of transparent media
- 18 - By increasing the.....of the transparent medium, the quantity of light that passes through it.....
- 19 - The medium which allows only a part of light to pass through is called.....
- 20 -and.....are examples of translucent media
- 21 - The medium which doesn't allow light to pass through is called.....
- 22 -and.....are examples of opaque media
- 23 - The light travels through the.....media in.....lines
- 24 - The light intensity is the.....
- 25 - Light intensity of a surface is.....proportional to square of the distance between the surface and the light source

26 – As the distance between the light source and the surface increases twice (double) , the intensity of light.....to its.....

5 - Give reason for each of the following :

- 1 – Light waves are considered transverse electromagnetic waves?.....
- 2 – Light can travel through free space?.....
- 3 – The light of the Sun is a complex light?.....
- 4 – Formation of spectrum colours?.....
- 5 – The energy of red photon has the lowest energy in spectrum colours?.....
- 6 – The energy of violet photon has the highest energy in spectrum colours?.....
- 7 – The energy of red light photon is less than that of orange light photon?.....
- 8 – The energy of violet photon is larger than that of blue photon?.....
- 9 – A clear glass is a transparent medium?.....
- 10 – We can't see fish at the bottom of the River Nile?.....
- 11 – A tissue paper is a translucent medium?.....
- 12 – When we put the crayons in a desk term made of faint glass, the upper part of it is visible, while the bottom doesn't look as clear?.....

- 13 - Aluminium foil is an opaque medium?.....
- 14 - The wood doesn't allow the passage of light through it?.....
- 15 - The inability to see the impurities present in black honey (molasses)?.....
- 16 - The intensity of light on a surface decreases to its quarter as the distance between the surface and light source is doubled?.....
- 17 - The intensity of light on a surface increases four times when the distance between the light source and you decreases to its half value?.....

6 - What happens when :

- 1 - Incidence of a white light ray on one face of a triangular glass prism?

A compact disc (CD) is put such that its shiny side faces sunlight?.....

- 2 - Light falls on a transparent medium (clear glass)?.....

- 3 - You look at a page of a book through a transparent glass?.....

- 4 - Several transparent plastic strips are put on a sheet of graph paper?.....

- 5 - Light falls on a translucent medium (a flint glass)?.....

- 6 - You look at a page of a book through a frosted glass?.....

- 7 - Light falls on an opaque medium (a piece of wood)?.....

- 8 - You look at a picture through a metallic sheet?.....
.....
- 9 - The distance between the source of light and a surface is doubled (light intensity)?.....
.....

7 - What is the importance of :

- 1 - Triangular glass prism :.....
.....
- 2 - Light : It is used in.....like :
- a. :
- b. :
- c. :

8 - Put (✓) or (x) then correct the false statement :

- 1 - Light is a form of matter (.....)
- 2 - The velocity of light through vacuum is 30000 km/sec (.....)
- 3 - Red light has the lowest frequency and the longest wavelength (.....)
- 4 - Violet light has the highest frequency and the shortest wavelength (.....)
- 5 - The frequency of the green light is lower than that of yellow light (.....)
- 6 - Energy of the photon = Plank's constant + Frequency of the photon (.....)
- 7 - The energy of the quanta of light is directly proportional to the wavelength of the light wave (.....)
- 8 - The energy of red light is less than the energy of yellow light (.....)
- 9 - Media can be classified according to the ability to transmit light into transparent and translucent media only (.....)
- 10 - Water, air and molasses are transparent media (.....)
- 11 - By increasing the thickness of the transparent medium, the quantity of light that passes through it increases (.....)

- 12 – The objects can be seen clearly through translucent media (.....)
- 13 – Light travels in transparent media in the form of zigzag lines (.....)
- 14 – The intensity of light on a surface is directly proportional to the distance between the light source and the surface (.....)
- 15 – The intensity of light on a surface increases as the distance between the source of light and the surface increases (.....)
- 16 – As the distance between light source and a surface decreases to its one third, the intensity of light increases 3 times (.....)

9 – Mention the mathematical relation (formula) for :

- 1 – The photon frequency of a wave and its energy
-

10 – Cross the odd word out, then write scientific term :

- 1 – Yellow – Blue – White – Violet – Red (.....)

The scientific term for the remaining :

- 2 – Glass – Ceramic – Water – Air (.....)

The scientific term for the remaining :

- 3 – Wood – Concrete – Air – Metal (.....)

The scientific term for the remaining :

- 4 – Light travels in straight lines

The speed of light differs in different media

White light consists of seven simple colours

Light travels in materialistic media only

The thickness of a light beam can be controlled (.....)

The scientific term for the remaining :

II – Choose the correct answer :

1 – Light waves are.....waves

- | | |
|-------------------------------|---------------------------------|
| a. mechanical transverse | c. electromagnetic longitudinal |
| b. electromagnetic transverse | d. mechanical longitudinal |

2 – The distance that light travels in a second is.....

- | | |
|--------------------|----------------------|
| a. light frequency | c. light intensity |
| b. light speed | d. no correct answer |

3 – The **main source** of **light** on the **Earth** is the.....

- | | |
|---------|-----------|
| a. Moon | c. star |
| b. Sun | d. candle |

4 – White light consist of.....spectrum colours

- | | | | |
|------|------|------|------|
| a. 5 | b. 6 | c. 7 | d. 9 |
|------|------|------|------|

5 -colour has the **lowest** deviation

- | | | | |
|-----------|----------|-----------|--------|
| a. Violet | b. Green | c. Yellow | d. Red |
|-----------|----------|-----------|--------|

6 – The.....colour of the spectrum colours has the **lowest** frequency

- | | | | |
|-----------|-----------|--------|----------|
| a. violet | b. yellow | c. red | d. green |
|-----------|-----------|--------|----------|

7 – The.....colour of the spectrum colours has the **longest** wavelength

- | | | | |
|-----------|-----------|--------|----------|
| a. violet | b. yellow | c. red | d. green |
|-----------|-----------|--------|----------|

8 -colour has the **highest** deviation

- | | | | |
|-----------|----------|-----------|--------|
| a. Violet | b. Green | c. Yellow | d. Red |
|-----------|----------|-----------|--------|

9 – The.....colour of the spectrum colours has the **highest** frequency

- | | | | |
|-----------|-----------|--------|----------|
| a. violet | b. yellow | c. red | d. green |
|-----------|-----------|--------|----------|

10 – The.....colour of the spectrum colours has the **shortest** wavelength

- | | | | |
|--------|-----------|----------|-----------|
| a. red | b. yellow | c. green | d. violet |
|--------|-----------|----------|-----------|

19 – The **quanta** of.....colour has the **highest** energy

- a. blue b. violet c. green d. red

20 – The **quantum** of **energy** of **green** light is....the **quantum** of **energy** of **yellow** light

- a. greater than b. equal to c. less than d. (a) and (b)

21 – All the following are from the characteristics of **violet** colour, **except**.....

- a. It has the highest frequency of the spectrum colours
b. It has the longest wavelength of the spectrum colours
c. Its photon has the largest energy
d. It is the nearest colour to the base of the prism

22 – The medium which permits **most** light to pass through is called.....medium

- a. transparent c. semi-transparent
b. translucent d. opaque

23 – Media through which objects **can** be seen **clearly** are called.....

- a. opaque media c. translucent media
b. transparent media d. spectrum colours

24 – All the following are **examples** of **transparent** media, **except**.....

- a. air c. glass
b. tissue paper d. clear water

25 – By **increasing** the **thickness** of the **transparent** medium, the **amount (quantity)** of light passing through it.....

- a. decreases b. increases c. is constant d. same

26 – The medium which permits **a part** light to pass through is called.....medium

- a. transparent b. translucent c. opaque d. black

27 – Media through which objects **can** be seen **less clearly** are called.....

- a. opaque media c. translucent media
b. transparent media d. spectrum colours

28 – All the following are **examples** of **translucent (semi-transparent)** media, **except**.

- a. air
- b. tissue paper
- c. forest glass
- d. flint glass

29 – Light **can** be **easily** transmitted through.....media

- a. transparent
- b. semi-transparent
- c. opaque
- d. (a) and (b)

30 – The medium which **doesn't** permits light to pass through is called.....medium

- a. transparent
- b. translucent
- c. semi-transparent
- d. opaque

31 – Media through which objects **can't** be seen at all are called.....

- a. opaque media
- b. transparent media
- c. translucent media
- d. spectrum colours

32 – All the following are **examples** of **opaque** media, **except**.....

- a. black honey
- b. milk
- c. metals
- d. tissue paper

33 – Which one from the following **doesn't** permit the passage of light.....

- a. Air
- b. Clear Water
- c. Milk
- d. Flint glass

34 – The human skin and molasses are considered a (an).....media

- a. transparent
- b. opaque
- c. translucent
- d. (a) and (c)

35 – Light travels in.....lines

- a. curved
- b. circular
- c. straight
- d. zigzag

36 – Light.....

- a. travels in straight lines
- b. consists of crests and troughs
- c. can be analyzed
- d. all the previous

37 – The **light intensity** of a surface is **inversely** proportional to the.....between the surface and the source of light

- a. distance
- b. square of the distance
- c. cube of the distance
- d. (a) or (b) are correct

38 – As the **distance** between the source of light and the surface of a wall **decreases**, the **light intensity** on the surface.....

- a. decreases
- b. increases
- c. is doubled
- d. constant

39 – If the **distance** between a surface and a source of light **decreases** to **half**, the **light intensity** of the surface.....

- a. decreases to its one fourth
- b. increases twice
- c. decreases to its half value
- d. increases four times

40 – Which of these characteristics is **not** applied to **light**?.....

- a. It is an electromagnetic wave
- b. It needs a medium to travel through
- c. It travels in straight lines
- d. It has the ability to stimulate the sense of vision

12 – Problems :

1 – Calculate the **distance** between the **Earth** and the **Moon**, if you know that the **reflected sunlight** on the **Moon's surface** reaches the **Earth** after **1.3 sec**

.....

.....

2 – How much it takes for light to cover a distance equals 3×10^8 m in the space?

.....

.....

3 - If the **distance** between the **Earth** and the **Sun** is 1.5×10^8 Km. Calculate the **time** taken by sunlight to reach the Earth in **minute** unit

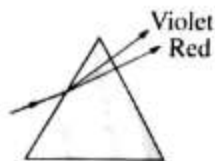
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13 – Answer the following :

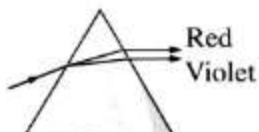
1 – A light ray falls on a prism. Which of the following figure express this? Why?



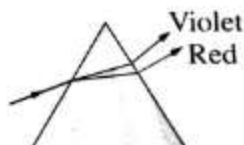
(a)



(b)

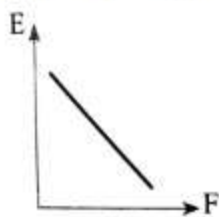


(c)

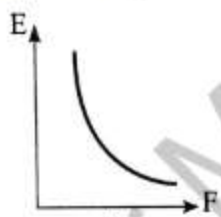


(d)

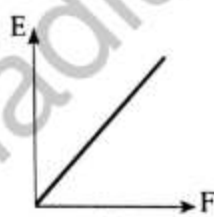
2 – Choose : Which of the following graphs represents the relation between the frequency of light (F) and its energy (E)?



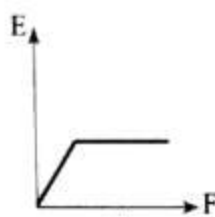
(a)



(b)



(c)

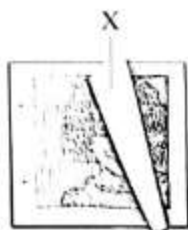


(d)

3 – From the opposite figure :

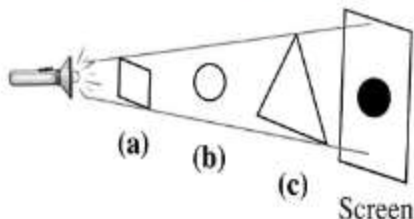
a. What is the type of slide that placed over the image?

b. Explain why, we can't see the part present below (X) clearly?



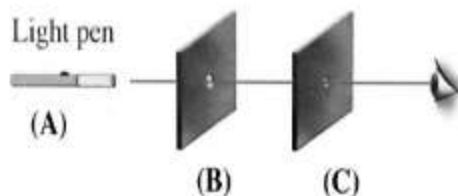
4 – In the following figure, the shadow formed on the screen indicates that (a,b,c) are made of.....respectively

- iron, flint glass, transparent plastic
- glass, rubber, cartoon
- cartoon, plastic, glass
- transparent glass, rubber, glass



5 – Study the following figure, then answer the following questions :

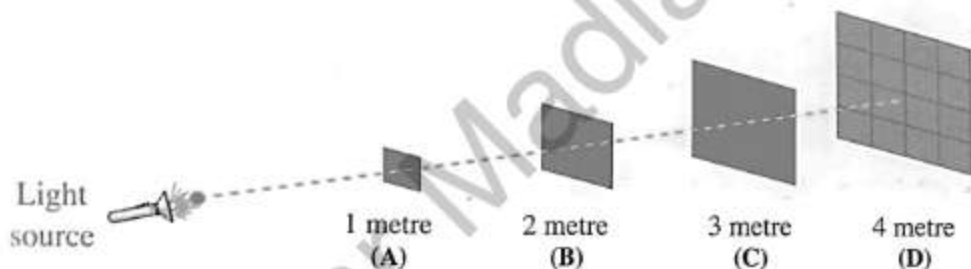
1. **Light** is a form of energy and this **energy** depends on the.....of its **wave**, so the **least** frequency is.....colour, while the **most** frequency is.....colour



2. The given drawing is for an activity proves that **light travels** in.....
3. **What will happen**, if we **move** part (C) **slightly** to the right?.....

6 – Study the following figure well, then answer :

In the following figure, the light intensity of the surface at point (A) equals the **unity**.



Choose from the following values : $(\frac{1}{2} - \frac{1}{3} - \frac{1}{4} - \frac{1}{6} - \frac{1}{9} - \frac{1}{12} - \frac{1}{16})$

What is suitable to be the light intensity at the points (B), (C) and (D)?

1. Point (B) :
2. Point (C) :
3. Point (D) :

THANK YOU

Science
Second Preparatory
Second Term

Unit **TWO**

Lesson **THREE**

QUESTIONS

1 - Write the definition of each of the following :

1 - Light reflection :

2 - Reflecting surface :

3 - Regular (uniform) light reflection :

4 - Irregular (non-uniform) light reflection :

5 - Angle of incidence :

6 - Angle of reflection :

7 - First law of light reflection :

8 - Second law of light reflection :

9 - Light refraction :

10 - Optical density of the medium :

11 - Absolute refractive index :

12 - Mirage :

2 - What is meant by :

1 - Angle of reflection of a light rays is 40° ?

- 2 - Angle of refraction of a light rays is 20° ?
- 3 - Angle of emergence in a prism in 50° ?
- 4 - Absolute refractive index of water is 1.33?
- 5 - The **absolute refractive index** of a medium is **high**?

3 - Write the scientific term for each of the following :

- 1 - It is the returning back (rebounding) (bouncing) of light waves in the same medium on meeting a reflecting surface
- 2 - A smooth or rough surface at which the reflection of light takes place
- 3 - The reflection in which the light rays recoil (rebound) in **one direction** when fall on **a glistening surface**
- 4 - The reflection in which the light rays recoil (rebound) in **many directions** when fall on **a rough surface**
- 5 - It is a narrow light beam which is represented by a straight line and it **intersects** with the reflecting surface at the point of incidence
- 6 - It is a narrow light beam which is represented by a straight line and it is **reflected** from the reflecting surface at the point of incidence
- 7 - It is the angle between the **incident** light ray and the line perpendicular to the reflecting surface (normal) at the point of incidence
- 8 - It is the angle between the **reflected** light ray and the line perpendicular to the reflecting surface (normal) at the point of incidence
- 9 - Angle of incidence = angle of reflection
- 10 - The incident light ray, the reflected light ray and the normal to the reflecting surface at the point of incidence, all lie in one plane perpendicular to the reflecting surface

- 11** - It is the change of light path when it travels from a transparent medium to another transparent medium of different optical density
- 12** - The ability of the transparent medium to refract light rays
- 13** - It is the angle between the incident light ray and the normal at the point of incidence on the interface (separating surface)
- 14** - It is the angle between the refracted light ray and the normal at the point of incidence on the interface (separating surface)
- 15** - It is the angle between the emergent light ray and the normal at the point of emergence on the interface
- 16** - It is the ratio between the velocity of light through air to the velocity of light through another transparent medium
- 17** - A phenomenon that appears in desert as a result of total internal reflection

4 – Complete the following statements :

- 1** - The **light reflection** is classified into two types which are.....and..... according to the.....of reflecting surface
- 2** - When parallel light rays meet a **rough** surface, they reflect in.....directions and this is called.....reflection
- 3** - Theand thin aluminium sheet are examples of smooth surfaces which causereflection
- 4** - When parallel light rays meet a **rough** surface, they reflect in.....directions and this is called.....reflection
- 5** - A leaf of plant and.....are examples of rough surfaces which cause.....reflection
- 6** - A woolen jacket causes.....reflection of light rays, while a stainless steel sheet causes.....reflection of light rays
- 7** - The angle of.....is the angle between the **incident** light ray and the line perpendicular to the reflecting surface at the point of.....
- 8** - The angle of.....is the angle between the **reflected** light ray and the line perpendicular to the reflecting surface at the point of.....

- 9 – The first law of light reflection states that.....
- 10 – The incident light ray, the.....light rays and the normal to the surface of reflection at the point of incidence, all lie in.....plane.....to the.....surface and this law is known as.....
- 11 – When a light ray **falls perpendicular** on a reflecting surface, it reflects.....,because the angle of incidence and the angle of reflection equal.....
- 12 – Light.....is the change of light path when it travels from a transparent medium to another transparent medium of different.....
- 13 – The optical density changes from one medium to another due to the change in the light.....through such medium
- 14 – The angle of.....is the angle of between the refracted light ray and the.....at the point of incidence on the separating surface
- 15 – When a light ray travels from a medium of.....optical density to another of.....optical density, it refracts **far from** the normal on the separating surface
- 16 – When a light ray travels from air to water, it refracts.....the normal and the angle of refraction is.....that the angle of incidence
- 17 – If the angle of incidence is more than the angle of refraction, this means that the light ray travels from a medium of.....optical density to another of.....optical density
- 18 – When a light ray **falls perpendicular** to the interface between two transparent media different in optical densities, it.....to the medium without.....
- 19 – The absolute refractive index of the medium is the ratio between.....to.....
- 20 – The **absolute refractive index** of any medium is always.....than **one**, because the velocity of light through air is always.....than the velocity of light through any other transparent medium
- 21 – As the optical density of a medium is high, so its refractive index is.....and the velocity of light through it is.....
- 21 – From the **natural phenomena** that are related to the **reflection** and **refraction** of light are.....and.....

22 - A pencil which is partially immersed in water appears as being.....due to theof light rays coming from the immersed part in water

23 - When you look at a **fish** in a trough filled with water, its.....position will be higher than its.....position due to light.....

24 - When you look at a coin in a glass of water, its.....position appears to be lower than the.....position

25 -is a natural phenomenon that takes place on **desert roads** at noon in summer days due to light refraction

5 - Give reason for each of the following :

1 - Formation of inverted images of buildings on the road when rain falls?.....

2 - A stainless steel plate produces regular light reflection, while a leather jacket gives irregular light reflection?.....

3 - Light ray which falls perpendicular on a glistening surface, reflects on itself?.....

4 - The light **refracts** when it travels from a medium to another?.....

5 - The optical density of a medium differs from one medium to another?.....

6 - When a light ray travels from air to water, it refracts near the normal?.....

7 - When a light ray travels from air to glass, the angle of refraction is smaller than the angle of incidence?.....

8 - When a light ray travels from glass to air, it refracts far from the normal?.....

9 - When light ray travels from glass to air, angle of refraction is more than of incidence?.....

10 - The ray falling perpendicular on the separating surface between two media different in the optical density doesn't refract?.....

11 - The absolute refractive index for any transparent medium is always greater than one?.....

12 - The ability of diamonds to refract the light is greater than that of glass?.....

13 - The pencil which is partially immersed in water appears as being broken?.....

12 - The floor of the swimming pool appears higher than its real position?.....

13 - To pick up a coin which has fallen in a beaker filled with water in its real position, we must look at it vertically?.....

14 - Occurrence of mirage phenomenon in desert regions at noon?.....

6 - What happens when :

1 - Incidence of light rays on a smooth surface (a plane mirror)?.....

2 - Incidence of light rays on a rough surface (a piece of paper)?.....

3 - A light ray is incident on a plane mirror by angle of incidence equals 45° ?.....

4 - A light ray **falls perpendicular** to a reflecting surface?.....

5 - A light ray travels from a transparent medium to another of different optical density?.....

6 - A light ray travels from air to glass?.....

- 7 - A light ray travels from glass to air?.....
- 8 - A light ray travels **perpendicular** to the interface between two transparent media of different optical densities?.....
- 9 - You look at a pencil partially immersed in water?.....
- 10 - You look at a coin in a glass full of water?.....
- 11 - You drive a car in a desert road at noon at hot day?.....

7 - Put (✓) or (x) then correct the false statement :

- 1 - Light **refraction** is the rebounding of light rays in the same medium on meeting a reflecting surface (.....)
- 2 - Light **reflection** plays an important role in the formation of **inverted images** of trees on the road when rain falls (.....)
- 3 - Reflection of light from smooth surfaces is called regular reflection (.....)
- 4 - In uniform reflection, the light rays are reflected directly in one direction (.....)
- 5 - Reflection of light from rough surfaces is called uniform reflection (.....)
- 6 - In regular reflection, light rays are reflected and scattered in different direction (.....)
- 7 - The reflection of light on a piece of white paper is a **regular** reflection, while the reflection of light in a plane mirror is **an irregular** reflection (.....)
- 8 - The **incident** light ray is the ray that bounces from the reflecting surface (.....)
- 9 - The angle between the **incident** light ray and the **normal** is called the angle of incidence (.....)
- 10 - If the **angle** between the **incident** light ray and the **normal** is 40° , so the **angle of reflection** equals 50° (.....)

- 11 – If the angle between the **incident** light ray and the **reflecting surface** equals 50° , so the **angle of reflection** equals 40° (.....)
- 12 – If the angle of incidence equals 60° , so the **angle** between the **incident** light ray and the **reflected** light ray equals 60° (.....)
- 13 – The **angle of reflection** of a light ray **falls perpendicular** on a reflecting surface equals zero (.....)
- 14 – Light **reflects** when it travels from a transparent medium to another transparent medium of different optical density (.....)
- 15 – The reason for light **refraction** is that its velocity is **equal** in different transparent media
- 16 – The ability of transparent medium to refract light is called the **refractive index** of the medium (.....)
- 17 – The optical density of a medium differs from one medium to another due to the change in the light intensity through such medium (.....)
- 18 – The light ray refracts towards the normal when it travels from air to glass (.....)
- 19 – When a light ray transfers from air to water, the angle of **incidence** is **greater than** the angle of **refraction** (.....)
- 20 – The **optical density of a medium** is the **ratio** between **velocity of light** through **air to the velocity of light** through the **medium** (.....)
- 21 – The velocity through a transparent medium is less than through air (.....)
- 22 – The **absolute refractive index** of any transparent medium is always greater than one (.....)
- 23 – The fish is seen higher than its real position in the fish tank (.....)
- 24 – Objects on the desert road sides seem as if they had inverted images on a wet area due to the mirage phenomenon (.....)

8 – Mention the mathematical relation (formula) for :

- 1 – The angle of incidence and the angle of reflection of light
-

2 – The light velocity in a medium and the refractive index for its material

.....

9 – Cross the odd word out, then write scientific term :

1 – A plane mirror – A leaf of tree – A piece of leather (.....)

The scientific term for the others :

10 – Choose the correct answer :

1 – Light.....plays a role in the formation of **inverted images** of the object on the road when rain falls

- a. velocity b. refraction c. reflection d. frequency

2 – A person inside a **dark room** can see another person **from** the **window**.

The **outside** person **can't** see the person in the **room**. This is because.....

- a. there is no enough light reflected from the person inside the room
b. the light rays can't penetrate the window
c. light doesn't penetrate windows
d. sunlight isn't intense enough as other light sources

3 – Light is reflected....., when it falls on a **smooth bright** surface

- a. irregularly c. and refracted
b. regularly d. and scattered

4 – In.....reflection, the **reflected** light rays are reflected in **one** direction

- a. irregular c. uniform
b. non-uniform d. total internal

5 – A **regular** light reflection occurs, when the light rays falls on.....

- a. a woolen jacket c. a leaf of tree
b. a stainless steel sheet d. a piece of leather

6 - Light is reflected....., when it falls on a **rough** surface

- a. irregularly
- b. regularly
- c. and refracted
- d. in one direction

7 - In.....reflection, the **reflected** light rays are reflected in **many** directions

- a. regular
- b. uniform
- c. non-uniform
- d. total internal

8 - An **irregular** light reflection occurs, when the light rays falls on.....

- a. a woolen jacket
- b. a leaf of tree
- c. a piece of leather
- d. all the previous

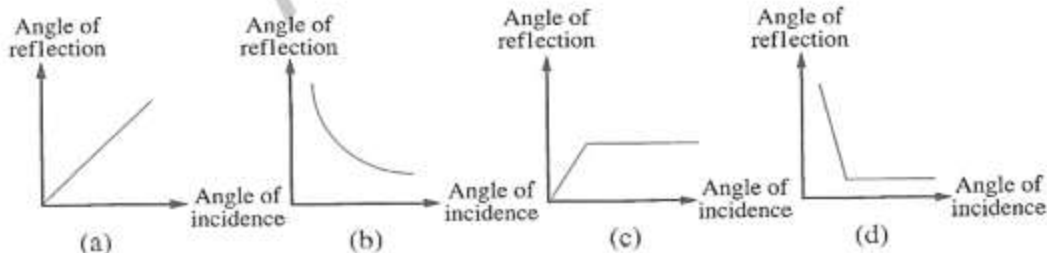
9 - The **angle** between the **incident** light ray and the line perpendicular to the reflecting surface at the point of incidence is called.....

- a. angle of reflection
- b. critical angle
- c. angle of incidence
- d. angle of emergence

10 - The **angle** between the **reflected** light ray and the line perpendicular to the reflecting surface at the point of incidence is called.....

- a. angle of reflection
- b. critical angle
- c. angle of incidence
- d. angle of emergence

11 - The graph.....represents the **relation** between the angle of incidence and angle of reflection



12 - If you know that the incident light ray which **falls perpendicular** on a reflecting surface reflects on itself, so the **angle of reflection** is equal to.....

- a. 0°
- b. 30°
- c. 45°
- d. 90°

13 - The..... is the change of light path, when it travels from a transparent medium to another transparent medium of different optical density

- a. light reflection
- b. light refraction
- c. light absorption
- d. light separation

14 - Light **refraction** is due to the **difference** in the.....through different media

- a. sound intensity
- b. light velocity
- c. nature of surface
- d. all the previous

15 - The ability of transparent medium to refract light is called the.....of the medium

- a. density
- b. refractive index
- c. optical density
- d. viscousity

16 -is the **angle** between the **incident** light ray and the **normal** at the point of incidence on the interface

- a. Angle of incidence
- b. Angle of reflection
- c. Angle of refraction
- d. Angle of emergence

17 -is the **angle** between the **refracted** light ray and the **normal** at the point of incidence on the interface

- a. Angle of incidence
- b. Angle of reflection
- c. Angle of refraction
- d. Angle of emergence

18 - is the angle between the **emergent** light ray and the **normal** at the point of emergence on the interface

- a. Angle of incidence
- b. Angle of reflection
- c. Angle of refraction
- d. Angle of emergence

19 - When a light ray transfers from **air** to **water (glass)**, it.....

- a. refracts near the normal
- b. refracts far from the normal
- c. passes without refraction
- d. reflects

20 – The **angle of incidence** is **smaller than** the **angle of refraction**, when a light ray transfers from.....

- a. air to water
- b. water to air
- c. air to glass
- d. (a) and (c)

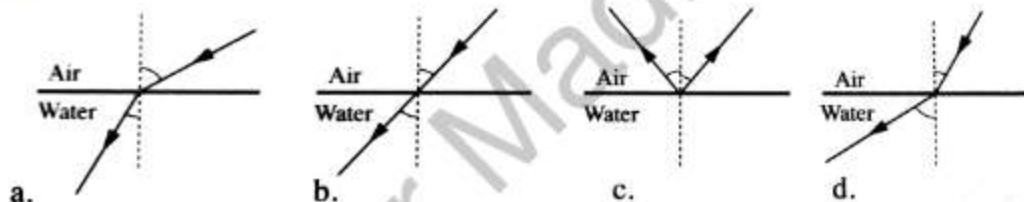
21 – When a light ray transfers from **water (glass)** to **air**, it.....

- a. refracts near the normal
- b. refracts far from the normal
- c. passes without refraction
- d. reflects

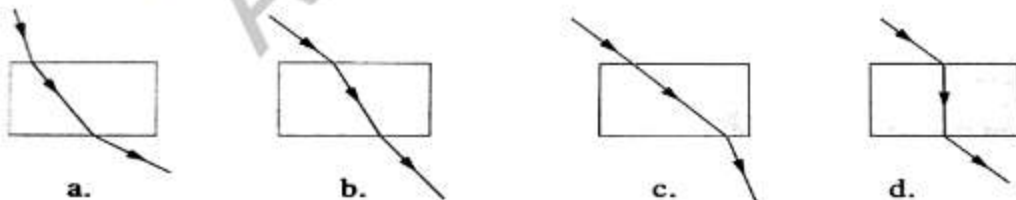
22 – When a light ray **falls perpendicular** to the **interface** between two different transparent media, it.....

- a. refracts near the normal
- b. passes without refraction
- c. angle of incidence equals zero
- d. (b) and (c)

23 – Which of the following figures represents a **correct** light refraction?.....

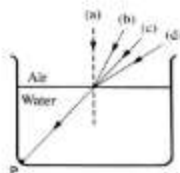


24 – Which of the following figures represents the refraction of light in a **rectangular glass block**? (Give reason).....



25 – In which direction should a **spotlight** be **directed** to the **water surface** to be **inspected** at point (P)?

- a. (a)
- b. (b)
- c. (c)
- d. (d)



26 – The **absolute refractive index** is the **ratio** between the **speed of light** through air and the.....

- a. speed of light through another medium
- b. speed of light through the same medium
- c. speed of sound through the same medium
- d. no correct answer

27 – The absolute refractive index for any medium is always.....one

- a. more than
- b. less than
- c. equal to
- d. no correct answer

28 – We have got the **absolute refractive index** of **four** materials. Which result of the **four** materials is **incorrect**? (Give reason).....

- a. 0.8
- b. 1.3
- c. 1.5
- d. 1.8

29 – A pencil seems broken when it is placed in a glass cup of water due to the.....of light

- a. reflection
- b. refraction
- c. separation
- d. total internal reflection

30 – When a boy looked at a fish under water, it **seemed** to be in the shown position.

Which position is the **real** one?

- a. A,B
- b. D
- c. E
- d. C,E



31 – From the **natural phenomena** that is resulted from the **refraction** and **reflection** of **light** on the **desert roads** is.....

- a. echo
- b. mirage
- c. seeing object higher than its normal position
- d. no correct answer

II – Show by drawing each of the following :

1 – The path of a light rays that falls on a reflecting surface with **angle of incidence** 30°

.....

.....

.....

.....

2 – The path of a light ray **falling perpendicular** on a reflecting surface

.....

.....

.....

.....

3 – The path of a light ray that is incident on one face a **rectangular glass block**

.....

.....

.....

.....

4 – The path of a light ray **falling perpendicular** on the **interface** (separating surface)

.....

.....

.....

.....

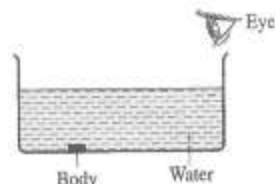
5 – The path of rays by which **Mohamed** sees the **image** of a body (**coin**) which is put inside a **basin** containing **water** (from one side)

.....

.....

.....

.....



I2 – Problems :

A – Light reflection : (First Law of light reflection)

- Choose the correct answer :

1 – If a light ray falls on a reflecting surface by an angle equals 45° , so its angle of reflection is....

- a. 35° b. 90° c. 55° d. 45°

2 – If the angle between a reflected light ray and the reflecting surface is 30° , so the angle of reflection will be equal to.....

- a. 15° b. 30° c. 60° d. 90°

3 – If the angle between the incident light ray and the reflected light ray equals 120° , so the angle of reflection equals.....

- a. 15° b. 30° c. 60° d. 90°

4 – If a light ray falls on a reflecting surface by an angle equals 55° , so the angle between the incident light ray and the reflected light ray equals

- a. 55° b. 70° c. 90° d. 110°

5 – If the angle between the incident light ray and the reflected light ray is 90° , so the angle of incidence equals.....

- a. 0° b. 30° c. 45° d. 90°

- Complete :

1 – If a light ray falls on a reflecting surface by an angle equals 45° , so the angle of reflection equals.....

2 – If the angle between the incident light ray and the reflected light ray is 120° , so its angle of reflection equals.....

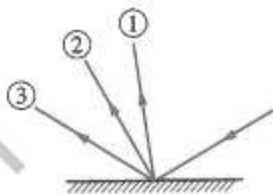
3 - If the **angle** between the **reflected** light ray and the **reflecting** surface is 40° , so the angle of incidence equals.....

4 - When a light rays falls on a reflecting surface, the **angle** between the **incident** light ray and the **reflecting surface** is 35° , therefore the **angle** of **reflection** equals.....and the **angle** between the **incident** light ray and the **reflected** light ray equals.....

- Study the opposite figures, then answer :

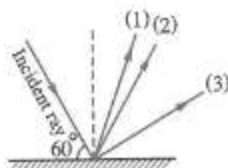
1 - From the opposite figure :

- Which of the following represents the **reflected** light ray in the **right** direction? **Why?**.....



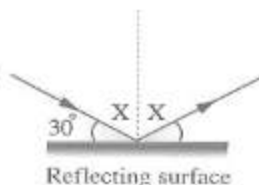
2 - From the opposite figure :

- a. The **reflected** ray is number.....
b. The **angle** of **reflection** equals.....



3 - From the opposite figure :

- a. **Calculate** the **angle** of **reflection**
b. **Re-draw** this figure in your **answer** paper and **show** the **angle** of **incidence** and **angle** of **reflection**
c. What can you **conclude** from this figure?



4 - Find the **angle** of **incidence** and **angle** of **reflection** in the following cases

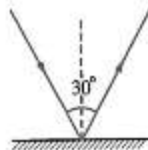


Fig. (1)

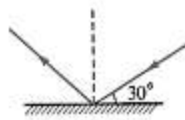


Fig. (2)

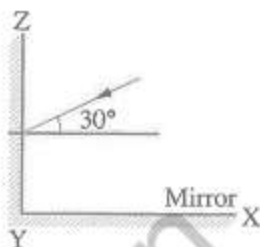
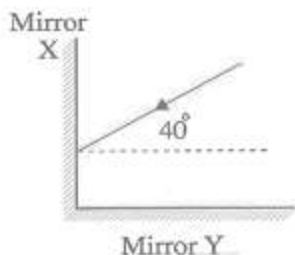


Fig. (3)

5 - The **reflected light ray** when falling on **another reflecting surface** is called.....

- a. the light reflection
- b. the reflected light ray
- c. the angle of incidence
- d. the incident light ray

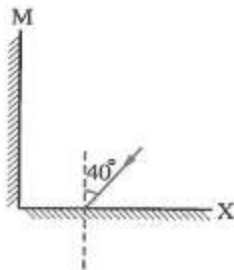
6 - **Complete** the **path** of the **rays** in the following two figures



7 - From the opposite figure

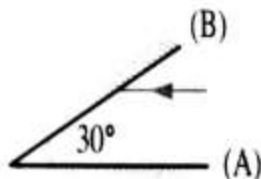
When a light ray falls on the **mirror (X)** by an **angle 40°** , the **reflected** light ray will fall on the surface of the **mirror (M)** by an angle of incidence equals.....

- a. 30°
- b. 40°
- c. 60°
- d. 50°



8 - **Draw** the following figure, then **complete** the pathway of light ray which is incident parallel to the mirror (A), where it reflects from it

- a. Find the **angle of reflection** from mirror (B)
.....
- b. Find the **angle of incidence** on mirror (A)
.....



B - Light refraction : (Absolute refractive index)

1 - Find the **absolute refractive index** of **diamond** given that the **speed of light** through it is 1.25×10^8 m/sec. and the **velocity of light** through **air** is 3×10^8 m/sec

.....
.....
.....

2 – Calculate the **velocity** of **light** through **glass** if you know that the **velocity** of **light** through **air** is 3×10^8 m/sec and the **absolute refractive index** of **glass** is 1.5

3 – If the **absolute refractive index** of **water** is $4/3$ and the **velocity** of **light** through **water** is 2.25×10^8 m/sec. Calculate the **velocity** of **light** through **air**

13 – Study the following figures, then answer the questions :

1 – Look at the following figures, then complete

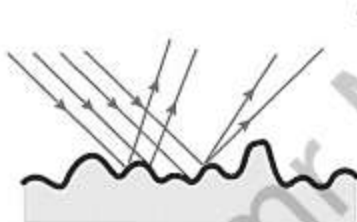


Fig. (a)

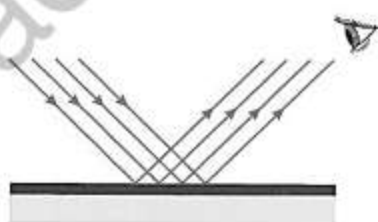
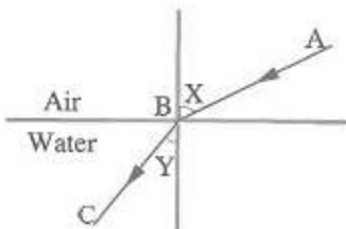


Fig. (b)

- The two figures represent.....
- Fig. (a) represents....., so the **reflecting surface** may be.....
- Fig. (b) represents....., so the **reflecting surface** may be.....

2 – From the opposite figure, complete :

- The ray (AB) represents.....
- The ray (BC) represents.....
- The angle (X) represents.....
- The angle (Y) represents.....



3 - From the following figures :

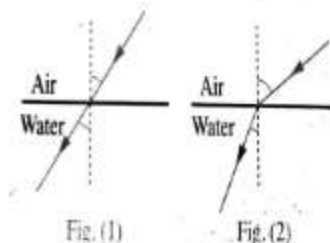
Which of them has **more** optical density? Why?

.....

.....

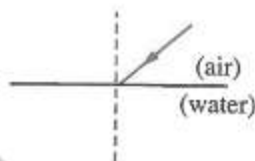
.....

.....

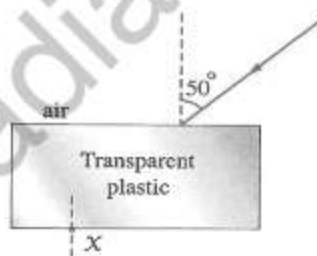
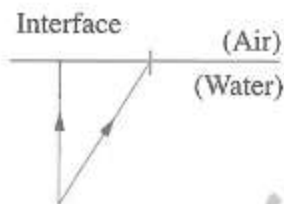


4 - **Complete** the opposite figure, then answer

- The **light ray** refracts.....the **normal**
- The **angle** of.....is **greater than** the angle of.....



5 - Complete the following **drawings** :



6 - Look at the opposite figure, then answer :

- The opposite figure indicates.....phenomenon
- The speed of light through air is.....its speed through water
- Why does the pencil seem broken?

.....

.....

.....



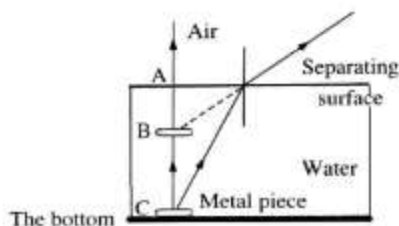
7 - From the opposite figure :

Write what is **detected** by the **distance** (AB) and (AC)

.....

.....

.....



8 - Look at the opposite figure, then answer :

- What does the figure **represent**?.....
- What is the **time** in which this phenomenon occurs?.....
- What is the **reason** for this **phenomenon**?
.....
.....



14 – Creative thinking :

1 - During **shaving chin** or **beauty care**, would the light source (spot) **above** the **mirror** in the **bathroom** be directed **towards** the **person** or the **mirror**? **Why**?
.....
.....
.....

2 - Book and reference books **aren't** preferred to be printed on **bright papers**? **Why**?
.....
.....

THANK YOU

Prep. 2

Choose:

1. Sound waves travel through.....
 - a. solids and liquids
 - b. vacuum
 - c. space
 - d. solid ,liquids gases.
2. Light iswaves.
 - a. longitudinal and electromagnet
 - b. transverse and mechanical.
 - c. transvers and electromagnetic
 - d. longitudinal and mechanical
3. Sound produced due to..... of medium particles.
 - a. Vibration
 - b. motion
 - c. stopping
 - d.no correct answer
4. Sound velocity is measured by.....unit.
 - a. Hertz
 - b. metre
 - c. decibel
 - d. m/sec.
5. If the distance of source decreases 3 times, the intensity.....
 - a. increases 9 times
 - b. increases 3 times
 - b. decreases 9 times
 - d. decreases 3 times
6. All the following are factors affecting intensity except.....
 - a. distance between source and ear.
 - b. amplitude.
 - c. frequency.
 - d. the density of the medium.
7. Sounds of different instrument differ in.....
 - a. frequency
 - b. harmonic tones
 - d. fundamental tone
 - d. sound intensity.
8. Presence resonance box.....
 - a. increases intensity
 - b. decreases intensity
 - c. increase frequency
 - d. decrease intensity

9. The ability of medium to refract the light isof the medium.
- a. refractive index
 - b. density
 - c. optical density
 - d. viscosity
10. If the angle between incident light ray and the reflecting light ray is 50° , so the angle of reflection is
- a. 50°
 - b. 100°
 - c. 25°
 - d. 75°
11. The angle between the refracted light ray and the normal is
- a. angle of reflection
 - b. angle of incidence
 - c. angle of emergence
 - d. angle of refraction
12. If the amplitude of sound wave increases to double, its intensity
- a. Decrease to quarter
 - b. increase 4 times
 - c. increase 2 times
 - d. decrease to half
13. Sound intensity in presence of carbon dioxide is.....in case of air.
- a. larger than
 - b. less than
 - c. doesn't change
 - d. a, b and c
14. Intensity of soundin the direction of wind.
- a. increase
 - b. decrease
 - c. doesn't change
 - d. a, b and c
15. Harmonic tone isin pitch,in intensity.
- a. higher, lower.
 - b. lower, higher
 - c. higher, higher
 - d. lower, lower
16. Human ear are affected by.....frequency.
- a. 20Hz-200 kHz
 - b. 20Hz-20 kHz
 - c. 200Hz-2000KHz
 - d. 10Hz-10kHz
17. Doctors use waves with.....frequency to break kidney stones.
- a. less than 20 kHz
 - b. equal 20 Hz
 - c. more than 20 kHz
 - d. less than 10 Hz

18. White light consists ofspectrum colours.

- a. nine b. eight c. seven d. six

19.colour has the highest frequency.

- a. violet b. yellow c. green d. red

20.colour has highest deviation.

- a. violet b. yellow c. green d. red

21. If the frequency of red colour is 4×10^{12} Hz, the frequency of violet colour is $\times 10^{12}$ Hz

- a. 1.5 b. 3.5 c. 4 d. 7.5

22. The quanta ofcolour has the lowest energy.

- a. violet b. yellow c. green d. red

23. The medium which permits most light to pass is.....

- a. transparent b. translucent
c. semi-transparent d. opaque

24. Light travels inlines.

- a. curved b. circular c. straight d. no correct answer

25. The intensity of light is inverse proportional to the between surface and light source.

- a. distance b. square of distance c. cube of distance d. a,b,c

26. If the distance decreases to its half, the light intensity.....

- a. decrease to quarter b. increase 4 times
c. increase 2 times d. decrease to half

27. If the angle between incident light ray and the line perpendicular to mirror is 50° , so the angle of reflection is

- a. 50° b. 100° c. 25° d. 75°

28. The angle of reflection isthe angle of incident.

- a. more than b. less than c. equal to d. a,b,c

29. The angle between the emergent light ray and the normal is

- a. angle of reflection
- b. angle of incidence
- c. angle of emergence
- d. angle of refraction

30. A regular light reflection happens when light rays fall on

- a. Wood
- b. leather
- c. stainless steel
- d. paper

31. The angle between reflected light ray and the line perpendicular to reflecting surface is

- a. angle of reflection
- b. angle of incidence
- c. angle of emergence
- d. angle of refraction

32. Voice of men differs from women in

- a. intensity
- b. pitch
- c. frequency
- d. b and c

33. If sound wave propagate through air with 330m/sec. and its wavelength is 0.1 meter, so its frequency =.....

- a. 330 KHz
- b. 3300 Hz
- c. 33 KHz
- d. 330 Hz

34. As the velocity of rotation of the gear of savart's increases, the frequency..... anddecrease.

- a. increase, no. of teeth
- b. decrease , no. of teeth
- c. increase, pitch
- d. decrease pitch

35. The frequency produced from 20 teeth gear in savart's wheel when it rotate 300 cycles per a minute is Hz

- a. 100
- b. 300
- c. 600
- d. 6000

36. The property that differentiates between strong and weak sound is

- a. Intensity
- b. pitch
- c. quality
- d. no correct answer

37. Light refraction is due to the difference inthrough different media.
- sound intensity
 - nature of surface
 - light velocity
 - all of the above
38. The angle of incident is greater than the angle of refraction when light ray travels from.....
- air to water
 - air to glass
 - water to air
 - a and b
39. When light ray travels from air to water, it.....
- refracts near the normal
 - reflects
 - pass without refraction
 - refracts far from the normal
40. The absolute refractive index of any material is always
- more than 1
 - less than 1
 - equal to 1
 - equal to zero
41. A pencil seems broken in a cup of water due to.....of light.
- reflection
 - total internal refraction
 - refraction
 - no correct answer
42. If the speed of light through diamond is 1.25×10^8 m/sec., and the speed of light in air is 3×10^8 m/sec., so the absolute refractive index is
- 2.4
 - 1.3
 - 1.2
 - 0.4
43. Sound pitch increases by
- decrease frequency
 - increase frequency
 - increase length of air column
 - b and c
44. Frequency of a stringto its length.
- equal to
 - is direct proportional
 - is inverse proportional
 - has no relation

45. The sound of frequency 100 HZ is than the sound of 200 HZ.

- a. stronger b. softer c. harsher d. weaker

46. The frequency of sound produced from savart's wheel depends on

- a. the speed of rotation b. number of gear's teeth
c. distance between gear and ear d. a and b

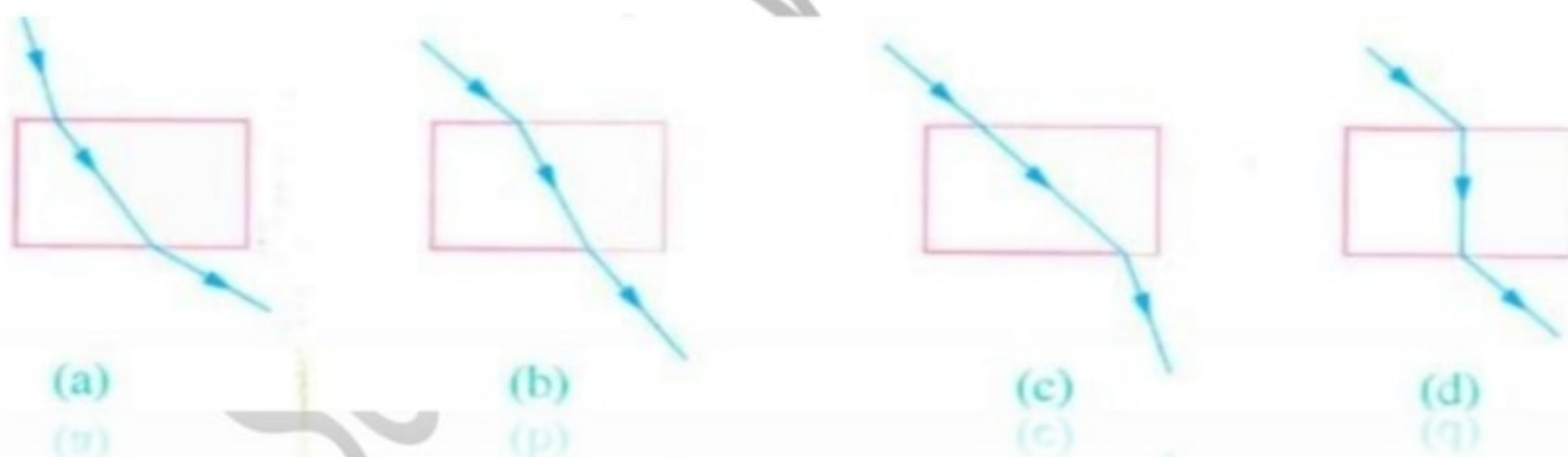
47. Ultrasonic waves have frequency.....

- a. less than 20 Hz b. equal 20 Hz
c. more than 20 kHz d. less than 10 Hz

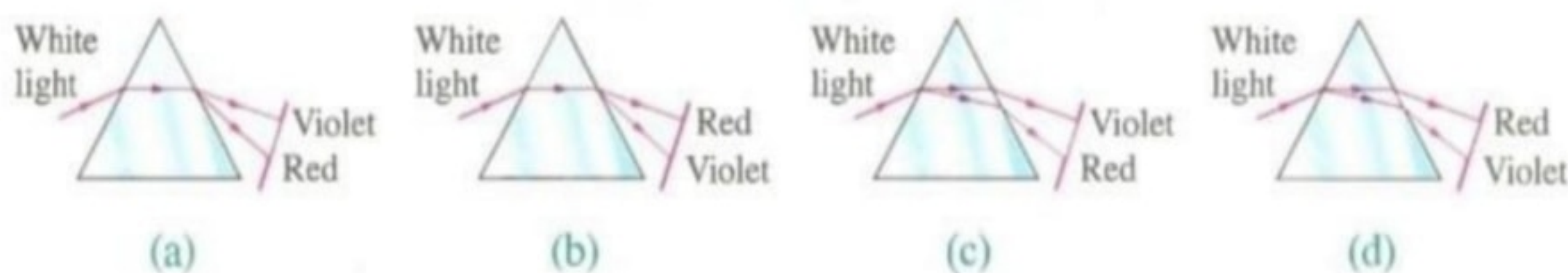
48. Ultrasonic waves used in

- a. Breaking down stones b. sterilizing food
c. discover landmines d. a,b,c

49. which of the following figures represent the refraction of light in a rectangular glass?



50. Which figure represent the analysis of light?



51. Unit of sound intensity is.....

- a. metre b. Watt/m² c. m/s d. Hz

52, All of the following are phenomenon related to reflection and refraction of light except.....

- a. mirage. b. apparent shapes of objects.
c. apparent position of objects. d. Separation of lights

53. Reflection and reflection of light which causes mirage is due to change of..... of air layers

- a. Temperature. b. Colour. c. Intensity. d. Pitch

54. Angle of incident = angle of reflection is called.....

- a. first law of refraction. b. second law of refraction
c. first law of reflection d. second law of reflection

55. As optical density increases, the speed of light

- a. increases b. decreases c. doesn't change d. a and b

56. When light falls perpendicular to surface of water coming from air, it.....

- a. refracts near to the normal b. refracts far from the normal
c. passes without refraction d. no correct answer

57. The angle of incident is smaller than angle of refraction, when light travels from.....

- a. air to glass b. air to water c. glass to air d. air to wood

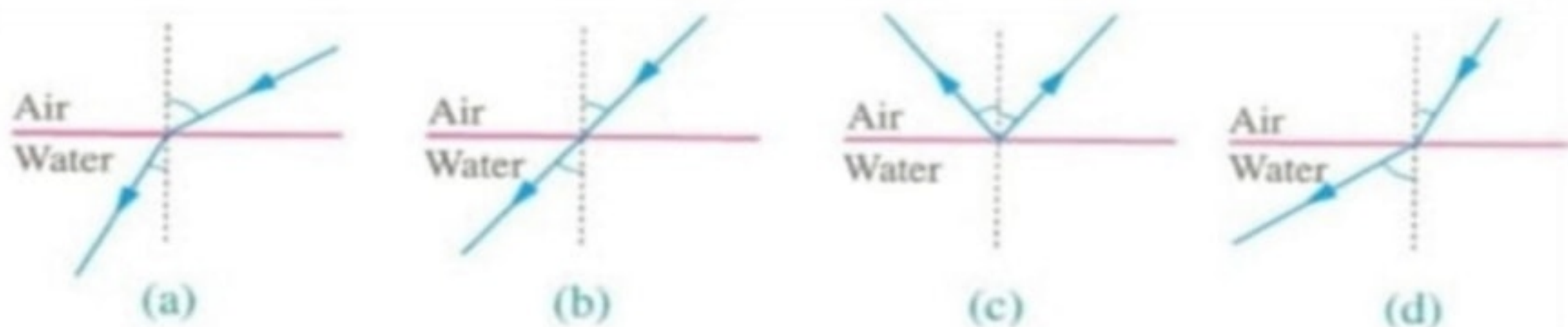
58. As optical density increases, absolute refractive index

- a. increases b. decreases c. doesn't change d. a and b

59. The fish in the glass basin seems at a positionthan its real

- a. lower b. higher c. same d. a,b,c

60. Which of the following figures represent a correct light refraction?



61.

Choose :

(1) Frequency is in area (1).

a. 15 Hz

b. 22 Hz

c. 2000 Hz

d. 25000 Hz

(2) Frequency is in area (2).

a. 15 Hz

b. 22 Hz

c. 25000 Hz

d. 30000 Hz

(3) Frequency is in area (3).

a. 15 Hz

b. 22 Hz

c. 2000 Hz

d. 25000 Hz

(4) Dogs and dolphins can hear waves.

a. infrasonic

b. sonic

c. ultrasonic

d. (a) and (b)

(5) Bats can hear waves.

a. infrasonic

b. sonic

c. ultrasonic

d. (a) and (c)

(6) Medical diagnosis instruments are made by using waves in area.

a. first

b. second

c. third

d. (a) and (b)

Area	Waves
3	Ultrasonic waves
2	Sonic waves
1	Infrasonic waves

Answers

1. Solid, liquid and gases
2. Transverse, electromagnet
3. Vibration
4. M/sec.
5. increase 9 times
6. frequency
7. harmonic tone
8. increase intensity
9. optical density
10. 25
11. Angle of refraction
12. Increase 4 times
13. Larger than
14. Increase
15. Higher, lower
16. 20-20 KHz
17. More than 20 KHz
18. Seven
19. Violet
20. Violet
21. 7.5
22. Red
23. Transparent
24. Straight
25. Square distance
26. Increase 4 times
27. 50
28. Equal to
29. Angle of emergence
30. Stainless steel
31. Angle of reflection
32. B ,c
33. 3300 HZ
34. Increase, no. of teeth
35. 100
36. Intensity
37. Light velocity
38. A,b
39. Refract near the normal
40. Larger than 1
41. Refraction
42. 2.4
43. Increase frequency
44. Is inversely proportion
45. Harsher
46. A,b
47. More than 20 KHz
48. A,b ,c
49. B
50. D
51. Watt/m^2
52. Separation of light

- 53. Temperature
- 54. First law of reflection
- 55. Decreases
- 56. Passes without refraction
- 57. Glass to air
- 58. Increases
- 59. higher
- 60. a
- 61.
 - 1. 15Hz
 - 2. 22 Hz
 - 3. 25000Hz
 - 4. ultrasonic
 - 5. a,c
 - 6. third

Science With Dr Dalia

امتحان علوم للصف الثانى الاعدادي

خصائص الموجات الصوتيه (لن يخرج عنه الامتحان)

Q1: Complete the following:

- 1 - The sound is created as a result of
- 2 - The sound does not transmit in, but there must be to move.
- 3 - Sound travels in the air in the form of, in the center of which is the source of the sound.
- 4 - The frequency of ultrasound waves is more than hertz, while the frequency of subacoustic waves is less than hertz.
- 5 - Sound waves may be, ultrasound, or
- 6 - The speed of sound in the air m / s, and it may be more or less than that.
- 7 - The speed of sound does not change by
- 8 - Musical notes are of a frequency while the noise is of a frequency
- 9 - The ear is comfortable to hear and is not comfortable to hear
- 10 - The sounds emanating from the tuning fork are considered while the sounds emanating from the hammer are considered

- 11 - The ear can distinguish between different sounds based on three characteristics:, and
- 12 - The smaller the length of the vibrating part of the string increases
- 13 - The longer the vibrating part of the string increases.....
- 14 - The smaller the length of the vibrating part of the string, the greater that the string creates per second.
- 15 - The degree of sound is a characteristic that the ear can distinguish between the layers of sound or
- 16 - The pitch of the voice depends on
- 17 - The pitch of the sound is proportional to with the frequency of its source.
- 18 - The relationship is between the length of the column of vibrating air and the frequency of the audible tone.
- 19 - If the sound is sharp, its pitch is and the frequency of the sound is
- 20 - If the sound is loud, its pitch is and the frequency of the sound is
- 21 - the layer of the bird's voice from the layer of the sound of the lion.
- 22 - The teacher's voice pitch from the parameter's voice pitch.

- 23 - The voice of the man while the voice of the woman
- 24 - The pitch of the acoustic pitch emanating from the Saffar wheel increases by and
- 25 - Sound intensity is the characteristic that the ear distinguishes sounds in terms of or
- 27 - Sound intensity is measured in units of
- 28 - The intensity of noise is measured with a scale.....
- 29 - Among the factors on which the sound volume depends are and
- 30 - The sound intensity at a point is proportional to with a square after that point from the sound source.
- 31 - The intensity of the sound is proportional to the square of the amplitude of the vibration of the sound source.
- 32- The sound increases with the density of the medium in which the sound travels.
- 33- When the sound waves travel in the same direction as the wind the sound intensity.
- 34 - The type of sound is a characteristic that the ear distinguishes sounds in terms of
- 35 - The harmonic notes associated with the basic note are higher than in and less than in

- 36 - The compound tone is a tone accompanied by an tone
- 37 - Ultrasound is used to break down and diagnose..... ..
- 38 - Ultrasound is used to sterilize
- 39 - Ultrasound is used to detect, and
- 40 - Earplugs made of are used to protect the ear from the effects of
- 41 - The sound type depends on the tones accompanying the tone of the sound source.
- 42 - Ultrasound is used in the medical fields andand
- 43 - A person can distinguish sounds whose frequency ranges between and
- 44 - If the distance between the sound source and the speaker is reduced to half, the sound intensity
- 45- Waves are used for medical examinations and to know the type and condition of the fetus.
- 46 - The basic note is higher and than the accompanying harmonic notes.
- 47- A sound at a frequency of 200 hertz is more than a sound at a frequency of 100 hertz.

Q2: Choose the correct answer from the parentheses:

- 1 - The human ear distinguishes the sound that it echoes
(50KHz - 30KHz - 300Hz - 5Hz)
- 2 - All of the following factors on which the sound volume depends, except for
(Frequency - amplitude of vibration - medium density - wind direction)
- 3 - The decibel is a unit of measurement
(Sound power - volume - pitch - volume level)
- 4 - Sound waves of frequency 10 hertz are
(auditory - ultrasound - infrasound)
- 5- The sound waves used in sterilizing food are
(Auditory - ultrasound - infrasound)
- 6 - Specialized doctors resort to breaking up kidney and ureter stones by using waves of frequency Hertz.
(It ranges between 20: 20 thousand - less than 20 - more than 20 thousand - all of the above is true)
- 7 - The Savar wheel is used to specify (pitch - intensity of sound - type of sound - speed of sound)
- 8 - Sound is waves
(Longitudinal mechanical - transverse mechanical - longitudinal electromagnetism)

9 - The speed of sound in air does not change

(Temperature - air density - air pressure - all of the above)

10 - Regular frequency sounds emanating from

(Hammer - digger - motorcycle - tuning fork)

11 - The ear can distinguish between different sounds depending on

(Pitch - volume - type of voice - all of the above)

12 - A bird's voice is similar to that of

(Lion - teacher - teacher - all of the above)

13 - When the distance between the sound source and the listener increases to three times its value, the sound intensity decreases to (one-third - nine - half - quarter)

The answers

The first question: complete: -

- 1) As a result of the vibration of objects
- 2) Void - a physical medium
- 3) balls of compressions and vacations centered on the source of the sound
- 4) Its frequency is more than 20 kHz - less than 20 hertz
- 5) Ultrasonic - auditory - sub auditory
- 6) The speed of sound in air is 340 m / s
- 7) It does not change according to the atmospheric pressure
- 8) Regular frequency - Uniform frequency
- 9) Musical notes - noise
- 10) Musical notes - noise
- 11) It is the pitch of the voice, the intensity of the voice, and the type of voice
- 12) The voice increases
- 13) The voice gets thicker
- 14) The number of vibrations
- 15) Sharp or thick layers of voice
- 16) at its source frequency
- 17) with the frequency of its source.
- 18) Reversible
- 19) High - High
- 20) Low – Low
- 21) above
- 22) less than
- 23) Thick - sharp
- 24) By increasing the number of gear teeth and the rotating speed of the wheel.
- 25) Sounds in terms of strength or weakness
- 27) (W / m²)
- 28) DB
- 29) The amplitude of the vibration of the sound source - the density of the medium in which the sound travels
- 30) in reverse
- 31) Parceled
- 32) Sound intensity

- 33) To make the sound stronger
- 34) in terms of the nature of its source, even if it is equal in degree and severity
- 35) higher than it in degree and less in severity
- 36) is a basic note accompanied by a harmonic tone
- 37) Fragmentation of Kidney and Ureteral Stones - Diagnosis of an enlarged prostate gland
- 38) Sterilization of food, water and milk
- 39) Detection of carcinoid tumors - type of fetus - landmines
- 40) Made of silicone - traces of noise
- 41) The harmonic notes accompanying the basic note emanating from each of them
- 42) Industrial - War Fields
- 43) whose frequency ranges between 20 Hz and 20 kHz.
- 44) Increase to 4 times
- 45) Medical
- 46) is lower in severity and higher in degree
- 47) Sharpness

The second question: Choose: -

- 1) 300 Hz
- 2) Frequency
- 3) the intensity of the sound
- 4) without audio
- 5) Ultrasound
- 6) More than 20 thousand
- 7) The degree of sound
- 8) Longitudinal mechanical
- 9) Atmospheric pressure
- 10) Tuning fork
- 11) All of the above
- 12) Parameter
- 13) The Nine